sgwu

undergraduate programmes 1971—72

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1972

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OTHER PUBLICATIONS

The following publications are available at the Registrar's Office, 1st floor, 1435 Drummond Street: Collegial Announcement, Graduate Studies and class schedules. A Student handbook is published early in the year.

Sir George Williams University
1435 Drummond St., Montreal 107

undergraduate programmes 1971-72
arts, science,
commerce & administration,
engineering

I
the university

SIR GEORGE WILLIAMS UNIVERSITY

Sir George Williams University is located in downtown Montreal. The Hall Building, opened in 1966, is at 1455 de Maisonneuve Boulevard; the Norris Building is at 1435 Drummond Street. The University also occupies a number of smaller buildings and rented premises in the immediate neighbourhood.

There are four faculties: Arts, Science, Commerce and Administration, and Engineering; all grant undergraduate degrees. Present graduate degrees are Master of Arts, Master of Science, Master of Engineering, Master of Business Administration and Master in Teaching Mathematics, as well as Doctorates in Economics, History, Chemistry, Physics and Engineering. Over a transitional period the University offers a two-year collegial-level (CEGEP-parallel) program in the day division only.

In the 1970-71 academic year enrolment was 5,500 collegial-level and undergraduate students in the day division, 8,500 evening undergraduate students, 3,000 evening partial students, and 1,000 graduate students. In 1971-72 the University will introduce in both day and evening divisions a new undergraduate programme, normally of three years' duration. Entry will require completion of the Quebec CEGEP program or the equivalent. However, there will be a special preparatory program for evening division students who have not graduated from the collegial level. To be admitted to this programme, students must have passed their 21st birthday prior to registration for the academic year in which they enroll. The last year in which the University will accept students for the collegial-level programme in the day division will be 1972-73.

Day and evening undergraduate degrees are equivalent. The programmes are the same, and are given largely by the same Faculty.

Laboratories
The University has approximately 100 laboratories with modern equipment for teaching and research in Biology, Chemistry, Physics, Engineering, Statistics, Psychology, Geography and Languages.

Computer Centre
The main installation in the Computer Centre is a Control Data Corporation 3300 digital computer, modern, time-sharing equipment. The

centre itself is located outside the University but there are remote terminals in each of the main University buildings. In addition, auxiliary computers and electronic calculators are available for the use of faculty and students, and the centre maintains two statistics laboratories.

Studios
Eight art studios are available for work in Fine and Applied Art.

Auditoria
A total of ten auditoria ranging in size from 100 to 700 seats are located in the Henry F. Hall and K.E. Norris Buildings. Those in the Hall Building are equipped with audio-visual installations and are tied in with the internal television network.

Art Galleries
The collection of art, which was started in 1962, now consists of close to 300 works. They represent a wide variety of modern schools, with particular emphasis on Canadian art.

Theatres
The Douglass Burns Clarke Theatre has a seating capacity of 370. It is the home of the Theatre Arts section of the Fine Arts Department. Dramatic presentations by Theatre Arts and student companies are given regularly through the academic year. In addition the Birks Auditorium, located in the Norris Building, is equipped with stage, dressing-rooms and scene shops.

Libraries
The Sir George Williams University library collection now contains some 350,000 books, periodicals, microforms and audio-visual materials, and is growing at a rate of about 50,000 items a year. The Main Library is located in the Norris Building; the Science and Engineering Library on the tenth floor of the Hall Building.

Food Services
The main cafeteria is located on the seventh floor of the Hall Building. There is a snack bar on the second floor of the Norris Building. Facilities are also available for banquets, teas, meetings, parties and dances. For further information, contact the banquet manager, located on the seventh floor of the Hall Building.

Centre for Instructional Technology
In the planning of the Hall Building special attention was paid to the development of audiovisual facilities. These include a professionally equipped television studio, a closed circuit television system serving all classrooms and auditoria, language laboratories with a carrel study room for electronic media. The equipment is under the control of the Centre for Instructional Technology, which is developing a comprehensive program in instructional communications. In addition, the Centre and the University's Department of Education jointly offer a graduate programme in Instructional Technology.

Student Union

A student union with snack bar facilities located at the south-west corner of de Maisonneuve and Crescent Street offers student and outside entertainment in a basement coffee house. In addition, there are lounges and study rooms. The Union is operated by the Students' Association.

University Bookstore

Books and supplies, including art materials, may be bought at the University Bookstore, located on the mezzanine of the Hall Building. From the first of September until the middle of October a self-service arrangement exists in the Birks Auditorium on the main floor of the Norris Building. (Students are reminded to consult a booklist to ensure the correct edition before purchasing).

II
calendar of events

1971

Tuesday, May 25	Registration begins - Evening Summer Session
Saturday, May 29	Registration closes - Evening Summer Session
Monday, May 31	Classes begin - Evening Summer Session
Tuesday, June 1	Last day for applications - Evening Division (1971-72)
Sunday, June 6	Spring Convocation
Friday, June 11 5:00 p.m.	Last day for financial adjustments to contracts (Summer Session)
Thursday, June 17	Last day for supplemental examination applications
Thursday, June 24	St. Jean Baptiste Day - University closed
Wednesday, June 30	Last day for academic withdrawal - Evening Summer Session
Thursday, July 1	Dominion Day - University closed
Wednesday, July 21	Supplemental examinations begin
Thursday, July 29	Classes end - Evening Summer Session
Saturday, July 31	Supplemental examinations end
Monday, August 2	Examinations begin - Evening Summer Session
Thursday, August 5	Examinations end - Evening Summer Session
Tuesday, August 24	Registration begins - Collegial and Undergraduate
Monday, September 6	Labour Day - University closed
Thursday, September 9	Registration closes - Collegial and Undergraduate. NO LATE REGISTRATION
Friday, September 10	Graduate registration
Monday, September 13	Classes begin - Day and Evening Divisions
Monday, September 13	Course change period begins
Friday, September 24	Course change period ends
Saturday, September 25	Last day for financial adjustments to contracts (1971-72)
Monday, October 11	Thanksgiving Day - no Day classes
Wednesday, October 27	Last day for academic withdrawal from first term half courses
Monday, November 8	Last day for applications - supplemental examinations for Summer Session
Thursday, November 11	Remembrance Day
Friday, November 19	Fall Convocation
Saturday, December 4	Supplemental Examinations - Summer Session
Saturday, December 11	Last day of classes - first term
Wednesday, December 15	Mid-term and first term final examinations - Day and Evening Divisions
Thursday, December 23	Examinations recess for holiday

1972

Tuesday, January 4	Examinations Recommence
Saturday, January 8	Examinations End
Monday, January 10	Classes begin - second term
Monday, January 10	Course change period begins for courses offered only in the second term
Friday, January 14	Course change period ends
Wednesday, February 23	Last day for academic withdrawal from full courses and second term half courses
Wednesday, March 1	Last day for application to Day University (1972-73)
Monday, March 13	Last day for applications - first term supplemental examinations - graduating students only
Saturday, March 25	First term supplemental examinations - graduating students
Friday, March 31	Good Friday, University closed
Saturday, April 1	Last day for applications to Evening Summer University
Monday, April 3	Easter Monday - University closed
Saturday, April 8	Last day of classes - second term
Saturday, April 15	Final examinations begin - Day and Evening Divisions
Saturday, April 29	Final examinations end
Monday, May 29/June 5	Spring Convocation
Thursday, June 1	Last day for application to Evening University (1972-73)

III
governors,
councils,
faculty & staff

SIR GEORGE WILLIAMS UNIVERSITY
BOARD OF GOVERNORS

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Chairman: C. Alec Duff, B.Sc.
Vice-Chairman: Edmond A. Lemieux, C.A.

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Victor Byers, M.Sc., Ph.D.
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Jock K. Finlayson
Richard P. Firth
Stephen Halperin
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Stephen Huza
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Moses Levitt, B.Comm.
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Calvin C. Potter, B.Sc.(Comm.), M.Comm., Ph.D.
John E. Skinner, B.Comm.
William D. Small, B.Comm., C.A., C.F.A.
John Smola, Ph.D.
Jane Stewart, B.A., Ph.D.
John W. Tait, C.A.
Henry Valle
E. Paul Zimmerman
Melvin C. Zwaig, B.Comm., C.A.

Governor Emeritus: Henry F. Hall, S.M., B.A., L.R.E., LL.D., D.D.

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Allan Bronfman, B.A., LL.B., Ph.D., LL.D.
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H. Roy Crabtree, LL.D.
Hon. George B. Foster, Q.C., M.B.E.
John B. Frosst, Ph.D.
Fraser F. Fulton, O.B.E., B.Sc., D.LL., M.E.I.C.
G. Arnold Hart, M.B.E., LL.D., D.C.L.
George M. Hobart, B.Sc.
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T. Denton Lewis
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Magnus Flynn	John Ufford
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Joti Bhatnagar
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Edwy Cooke
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Wynne Francis
Donald Fraser
Michael Gnarowski
John Hill
Anthony Hilton
Paul d'Hollander

John Jackson
Sidney Lamb
Arthur Lermer
Elizabeth MacLean
Gerald Mahoney
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Joseph Mouledoux
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Sui Lin
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Cedric Marsh

Brian Marshall
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    Information Officer .... Malcolm Stone, B.Com.
  Development Officer .... Brian Selwood

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  Assoc. Vice-Principal, Academic
    Planning .... James H. Whitelaw, M.A.
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  Assistant Dean .... Michel Despland, Th. D.*
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  Assistant Dean .... Henry Tutsch, LL.D.
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  Assistant Dean of Students .... A. D. Insleay, M.Sc.
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  Assistant Director of Guidance ..... F. W. Denton, M.A.

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   Administration .... A. J. Laprade, B.Eng.
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  Salary Administrator .... James Hartford, B.Com.
  Employment Officer .... Brigitte Perrier
  Manager, Food Services .... James Gowland

* on leave 1971-72

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  Assistant University Librarian for
    Public Services .... Marjorie Goodfellow, M.L.S.
  Assistant University Librarian for
    Technical Services .... Marjory Allen, B.L.S.

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  Communications and Director of
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  Manager, Administrative
    Services .... Wilfred McManus, B.A. B. Com.
  Manager of Academic Services ... Vincent McLeod, B.A.Sc.
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  Manager, Bookstore .... Margaret MacMurray

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                                      L Mus.
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    Assistant to the Director of
    Admissions .... Peggy Sheppard, B.Ed., B.A.
  Assistant Registrar .... Bruce Smart, F.L.M.I., B.A.

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  Assistant Director of Planning .... George LeBlanc, B.A.S.Eng.
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                                     M.E.I.C.
  Assistant Director, Physical Plant   Jacques Dupuis
  Non-Mechanical
    Superintendent .... John St. G. McCabe
  Electrical Superintendent .... Alfred C. Peters
  Mechanical Superintendent .... Fernand A. Villemaire

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Fraser, William R., B.A. (Mt. Allison), B.D. (U.T.C.), M.A. (Dal.),
Professor Emeritus
Thompson, Claude W., M.A. (Oxford),
Professor Emeritus

FACULTY (Full-time)

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Adams, Kenneth D., B.Sc. (S.G.W.), L.Mus. (McGill),
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* Adley, Thomas, J., B.Sc. (S.G.W.), Ph.D., D.I.C. (London),
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Ahmad, Jaleel, B.A. (Aligarh), M.S. (Pittsburgh), Ph.D. (M.I.T.),
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Ahmad, M. Mobin, M.A. (Punjab), M.A., Ph.D. (Chicago),
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Allan, Thomas S., M.A. (Glasgow),
Visiting Associate Professor of Education
* Anand, Kailash, K., B.A. (Punjab), M.A. (Delhi),
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Andres, David H., B.A., M.A. (Texas), Ph.D. (Waterloo),
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Antoniou, Andreas, B.Sc. (Eng.), Ph.D. (London),
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Armstrong, Muriel, B.A., BEd. (Alberta), M.A. (McGill),
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* Arnopoulos, Paris J., B.Sc., B.A. (S.G.W.), M.A. (N.Y.U.),
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Ashtakala, Syamala S., B.Sc. (Madras), Ph.D. (Toronto),

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Auchinachie, Gerald M., B.A. (U.B.C.), M.A. (Toronto),
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Bakony, Edward G., B.A., B.Com., M.A. (U.B.C.),
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Bartolome-Pardo, Fernando, B.L. (Madrid and Zaragoza), M.B.A. (Navarra,
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Bedford, F. W., B.A. (Loyola), B.Sc. (S.G.W.), M.Sc. (McGill),
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Beissel, Henry E., Equiv. B.Ph. (Cologne), M.A. (Toronto),
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Belkin, Roslyn, B.A. (S.G.W.), M.A. (Montreal),
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Bergeron, L.H., B.A., B.Ped. (Manitoba). Doctorat d'Université (Aix),
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Bird, Peter S., B.Sc., Ph.D. (Sheffield),
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Blaise, Clark L., B.A. (Denison), M.F.A. (Iowa),
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Boswall, M. Alberta, B.Sc. (Dal.),
Sessional Lecturer in Mathematics
* Bowering, George, B.A., M.A., (U.B.C.),
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Assistant Professor of Instructional Communications

Bozoki, George, Mech.Eng. (Budapest), M.S.I.E. (Purdue), Ph.D. (Indiana),
    Associate Professor of Management
Braham, Mark, B.A. (Goddard), Dip. Ed. (London), M.A. (Illinois),
    Associate Professor of Education
Brant, C. S., B.A. (Reed), M.A. (Yale), Ph.D. (Cornell),
    Professor of Sociology and Anthropology
Brender, William J., B.A., M.Sc. (McGill),
    Lecturer in Psychology
Breton, Gabriel R., B.A. (Manitoba), M.A. (Montreal), Ph.D. (Michigan),
    Associate Professor of Psychology
Brian, Mary A., B.A. (Toronto), M.A. (Bryn Mawr),
    Associate Professor of Mathematics
Brian, Michael, M.A. (Oxford),
    Associate Professor of English
Brink, Gunther, B.Com. (S.G.W.), M.B.A. (Western),
    Professor of Management
Brody, Josef, M.A. Doctorate, (Charles),
    Assistant Professor of Mathematics
Brown, Benson S., B.S. (M.I.T.), Ph.D. (Berkeley),
    Assistant Professor of Economics
* Brown, Terence, B.A. (Durham), B.Com. (S.G.W.), C.A.,
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Brune, Audrey, B.A. (N.Y.U.), M.A. (Iowa), M.A. (Chicago),
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Bryant, Ronald W.G., M.A. (Aberdeen), M.Sc. (L.S.E.),
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Sparling, Clifford C., B.A. (Queen's),
Associate Professor of Mathematics
Srivastava, Prem,
Lecturer in Geology
Srivastava, Shanta T.,
Lecturer in Zoology
Stern, L., B.A. (McGill),
Lecturer in English
Stevenson, Gertrude, B.A. (S.G.W.),
Lecturer in English
Stone, Neil, B.Sc., M.B.A. (Western),
Lecturer in Management

Strain, William J., B.A. (S.G.W.), C.A.,
Lecturer in Accountancy
Strei, Gerald, B.A. (Minn.),
Lecturer in English
Sullivan, Ruth,
Conference Leader in English
Surrey, Philip,
Lecturer in Fine Arts
Swibold, Susanne, B.F.A. (Chicago), M.F.A. (Michigan),
Lecturer in Fine Arts
Szablowski, G., B.C.L. (McGill),
Lecturer in Political Science

Tabakow, David,
Conference Leader in English
Terroux, George, B.A. (Loyola), M.A. (Essex), Ph.D. (Montreal),
Lecturer in English
Terry, W.,
Lecturer in Management
Trask, F. Stuart, B.A. (Acadia), B.Com. (S.G.W.), C.G.A.,
Lecturer in Quantitative Methods

Valaskakis, Kimon P., B.A. (American), Ph.D. (Cornell),
Lecturer in Economics
Vallejo, Catherine H., B.A. (S.G.W.),
Lecturer in Spanish
Veinot, Brian J., B.Com. (S.G.W.), C.G.A.,
Lecturer in Accountancy

Walters, Brenda, B.A., M.A. (S.G.W.),
Lecturer in English
Whittome, Irene,
Lecturer in Fine Arts
Wilcher, Asher, M.A. (Jerusalem),
Lecturer in Modern Languages
Wolf, Karl, Baccalaureate (Essen), M.A. (Marburg-Lahn),
Lecturer in German
Wolkove, Peter, C.A.,
Lecturer in Accountancy
Woodworth, Robert, B.A. (McGill),
Lecturer in Finance
Worrell, M. Thora, B.A. (S.G.W.),
Lecturer in English
Wrigglesworth, John, B.A. (McGill),
Lecturer in Mathematics
Wright, Jean, B.A. (U.B.C.),
Lecturer in English
Yahia, Mildred, B.A. (North Western), M.A. (Penn.),
Lecturer in French
Yedid, Joyce, B.A. (S.G.W.), M.A. (Buffalo),
Lecturer in English

Zgarka, Albert, Licence es Lettres, (Alger),
Lecturer in French

IV
admission regulations

ADMISSIONS

Thomas E. Swift, B.A., Assistant Registrar and
Director of Admissions
Peggy Sheppard, B. Ed., B.A., Assistant to the
Director of Admissions
Lynne Prendergast, Admissions Officer

Classification of Students

(1) *Undergraduate Students* : Undergraduate students are those who meet the full admission requirements of the University and who have been formally accepted for admission to a faculty of the University. These students enroll in either the Day or Evening Division with the intention of completing the work required for a degree. If a student is admitted to a degree programme, he will be classified as an undergraduate whether he is taking several subjects or only one in any given year.

(2) *Partial Course Students* : Students who do not wish to proceed to a degree irrespective of the number of courses they may be following in any given year are classified as partial course students. Students who register as partial students are not considered to have satisfied the undergraduate admission requirements and have no standing towards any degree at the University. If a partial student later transfers to undergraduate standing, he may receive credit towards his degree for the courses already taken, provided they apply towards the degree requirements at the time of transfer.

DEGREES OFFERED

Bachelor of Arts	B.A.	3 Year Programme
Bachelor of Fine Arts	B.F.A.	3 Year Programme
Bachelor of Science	B. Sc.	3 Year Programme
Bachelor of Commerce	B. Comm.	3 Year Programme
Bachelor of Engineering	B. Eng.	3 to 4 Year Programme

AREAS OF SPECIALIZATION

Students applying for entry to the Faculty of Arts will register in one of the following: a departmental major, a joint major, an inter-disciplinary major, a departmental honours programme, a combined honours programme, an interdisciplinary honours programme.

Students applying for entry to the Faculty of Science may register in an honours, major, or general programme.

Students applying for entry to the Faculty of Commerce and Administration will register in a major or honours programme.

Students applying for entry to the Faculty of Engineering will indicate which of the three available areas of specialization they wish to enter.

In keeping with the principles of general education in CEGEP, whereby students are encouraged to explore fields other than those of future specialization, universities must continue to offer, at the undergraduate level, certain introductory courses. It will be appreciated that students may not take for credit in their undergraduate programme courses which are similar in content to those used to qualify for admission. If in doubt, you should, before registering in a course, check with the Admissions Office or the appropriate department.

The various areas of specialization and programmes therein are listed below:

FACULTY OF ARTS	Major	Honours	Joint Major Component
Applied Social Science	x		x
Art History (B.A.)			x
Art History (B.F.A.)	x		
Art History & Studio Art (B.F.A.)	x		
Art Education (B.F.A.)	x		
Canadian Politics	x		
Canadian Studies	x		
Comparative Political Studies	x		
Economics	x	x	x
Early Childhood Education	x		
Education			x
English	x	x	x

	Major	Honours	Joint Major Component
English & Religion		X	
Fine Arts (B.F.A.)	X		
French	X	X	X
Geography	X	X	X
German	X		X
Graphic Design (B.F.A.)	X		
Greek			X
Hebrew			X
History	X	X	X
History & Religion		X	
Humanities of Science	X		X
International Affairs	X		
Judaic Studies	X		
Latin			X
Linguistics			X
Mathematics	X	X	X
Moving Pictures (B.A.)			X
Music (B.A.)			X
Philosophy	X	X	X
Philosophy & Education		X	
Philosophy & English		X	
Philosophy & Religion		X	
Philosophy & Sociology		X	
Philosophy of Education			X
Political Science	X	X	X
Political Philosophy	X		
Psychology	X	X	X
Religion (or History & Philosophy of Religion)	X	X	X
Religion & Sociology		X	
Russian			X
Russian Studies		X	
Social Welfare	X		
Sociology	X	X	X
Spanish	X		X
Statistics		X	
Theatre Arts (B.A.)			X
Theatre Arts (B.F.A.)	X		
Urban Studies	X	X	
Visual Arts (B.A.)			X
Visual Arts (B.F.A.)	X		

	Major	Honours	Joint Major Component
FACULTY OF SCIENCE			
Biochemistry	X	*	
Biological Sciences	X		
Cell and Molecular Biology		X	
Ecology		X	
Physiology and Developmental Biology		X	
Chemistry	X	X	
General Science	X		
Geology	X		
Mathematics	X	X	
Statistics	X	X	
Optimization	X		
Physics		X	
Experimental Physics	X		
Theoretical Physics	X		
Psychology	X	X	

FACULTY OF COMMERCE			
Accountancy	X	X	
Economics	X	X	
Finance	X	X	
General Business	X	X	
Management	X	X	
Marketing	X	X	
Quantitative Methods	X	X	

FACULTY OF ENGINEERING

The following general areas of specialization are offered in the Faculty of Engineering:

     Civil Engineering
     Electrical Engineering
     Mechanical Engineering

* *NOT AVAILABLE 1971-72*

ADMISSION REQUIREMENTS
(DAY AND EVENING DIVISIONS)

A) Successful completion of a two-year pre-university programme in a CEGEP*, or CEGEP - equivalent programme, with the award of a diploma for Collegial studies.

B) Within this general programme, successful completion of whatever specific courses are required for entry into a given undergraduate programme. These pre-university "profiles", established through joint action of the Quebec universities and the Department of Education of the Province, will be found in the Department of Education booklet "Enseignement Collegial 1970-71" or in the Sir George Williams University Collegial Programme Announcement. For the convenience of applicants, requirements are listed in each Faculty section of the announcement.

Applicants presenting other qualifications should consult with the Office of Admissions for additional information.

The University reserves the right to refuse admission even when the stated requirements for entrance have been satisfied.

CRITERIA FOR ADMISSION

A) The Pre-University Transcript

1) Applicants from a CEGEP.: Transcripts must be sent directly to the Office of Admissions by the Registrar of the CEGEP. The results of the first three semesters together with a certified list of courses being followed during the fourth and final semester must be submitted immediately. A final transcript showing the results of the fourth and final semester must also be submitted as soon as possible. Two copies of each transcript are required.

2) Applicants from a CEGEP - Equivalent Programme: Transcripts must be sent directly to the Office of Admissions by the Registrar of the University. A transcript showing the results of the previous year(s), the final results of any first semester half courses of the current year, and a complete list of courses

* Colleges of General and Vocational Education in the Province of Quebec.

being taken during the current year must be submitted immediately. A final transcript showing the complete record of study must be submitted as soon as possible. Two copies of each transcript are required.

3) Applicants from the S.G.W.U. Collegial Programme: Transcripts will be obtained by the Director of Admissions directly from the Records Office.

B) The Confidential Report

The confidential report is required of all applicants from a CEGEP; this report must be submitted directly by the responsible officer at the CEGEP. It is not required of any students who are enrolled in the CEGEP - equivalent programmes of universities.

C) English Language Requirements for Students whose First Language is not English.

A student whose native tongue is other than English and who has had all or part of his secondary schooling in another language must take the Sir George Williams University English Language test prior to his admission to the University. The student will be notified of the testing date and, upon completion of the test, will receive his result by mail. He must bring this result with him when he registers.

If his performance in the test indicates an insufficient knowledge of English, he will be required to take English 200, a non-credit course. He will remain in this course until, in the opinion of the English Department, he is able to express himself with reasonable clarity and correctness. If his performance in the test indicates a satisfactory knowledge of English, he will be granted an exemption from English 200.

Any student whose first language is other than English, and who is applying from outside Canada must demonstrate that he is proficient in the English language by writing the Test of English as a Foreign Language administered by the Educational Testing Service.

Information and applications to write the test may be obtained by writing to: Test of English as a Foreign Language, Educational Testing Service, Princeton, New Jersey, U.S.A.

Foreign students who are accepted to the University will be required to write the Sir George Williams English Language Test after their arrival in Montreal.

SELECTION PROCESS AND NOTIFICATION

Admission to undergraduate studies is based on a careful review of all credentials presented on behalf of a candidate. An application for admission is not given final consideration until all the required items have been submitted. Applicants are, in general, not sent a decision on their application until the Committee on Admission has had an opportunity to review the credentials of all other candidates seeking admission to the same discipline. However, the university does have an Early Conditional Admission plan for applicants to the first year of the Undergraduate programme.

EARLY CONDITIONAL ADMISSION

Applicants seeking admission to the undergraduate programmes may be granted a conditional acceptance on the basis of the first three semesters of work in a CEGEP, or its equivalent, programme. Acceptance is contingent upon the student's successful completion of the final semester of study and upon meeting the prescribed academic admission requirements. Candidates admitted on the basis of Early Conditional Admissions are notified by May 15.

SPECIAL NOTICE TO 1971
S.G.W.U. COLLEGIAL GRADUATES

Students who are currently enrolled in their final year of the Sir George Williams University Collegial Programme and who successfully complete the required pre-university curriculum prior to September 1971 will be admitted to the Undergraduate Division for the 1971-72 academic year. However, it must be noted that admission to a specific area of course specialization cannot be guaranteed. Given the present tight budgetary conditions, it is possible that space in a few disciplines will continue to be limited. In Commerce and Engineering, each of which has a common first-year programme irrespective of the desired area of course specialization, there should be no serious difficulty. In Science, where students' collegial experience should have made it possible to make well-founded choices, no serious problems are expected. In Arts, however, where pre-university prerequisites have deliberately been kept to a minimum and students may well not have had the opportunity to explore adequately their future field of study, it is possible that a few areas of course specialization could become oversubscribed. This would necessitate limiting enrollment. In such cases, the university would have no alternative but to offer to those students concerned their second choice of programme.

MATURE STUDENT QUALIFYING PROGRAMME

In keeping with the traditional open policy of Sir George Williams towards older students, the Mature Student Qualifying Programme is designed to enable students who are twenty-one years of age or older to prepare themselves for entry to the new post-CEGEP undergraduate programmes. The University assumes that the age of the student will have allowed him or her to acquire informally some of the general education given to younger students in CEGEP, and concentrates on the knowledge and skills needed to tackle a given undergraduate programme. The Mature Student Qualifying Programme will be offered in the Evening Division only, starting in September, 1971. For full details, see page 285.

ADMISSION AS A PARTIAL COURSE STUDENT

University undergraduate entrance requirements are expected, but may be waived for partial students over 21 years of age, who have, through other experiences, the essential background for the course or courses. Nevertheless, the University reserves the right of decision as to the partial student's eligibility and, in certain cases, the right to ask for proof of appropriate university entrance requirements.

While partial course students following single courses of interest are encouraged to enroll, priority will be given to students proceeding to a degree.

It is not necessary for new partial course students to submit an application form. Partial course students should contact the Records Office for the proper procedure to follow.

ADDITIONAL REQUIREMENTS

Application Fee

All applications for undergraduate standing must be accompanied by an application fee of $10 (Canadian), payable by certified cheque or money order. It is not refundable under any circumstances nor will it be applied towards tuition fees.

Admission Deposit (Day Applicants Only)

Each applicant who has been granted an Early Conditional or Regular admission to the Day Division is required to submit a certified cheque or money order of $25.00 (Canadian) to confirm his intention of entering the University. This admission deposit is non-refundable, but will be applied towards tuition fees. In addition, it is not transferable nor may it be applied towards tuition fees for a session other than that to which the student has applied.

Students who receive an Early Conditional Acceptance but who do not successfully complete the minimum academic requirements for entrance and are subsequently refused admission will be refunded the admission deposit.

Medical Examination Report (Day Applicants Only)

Each student who is granted admission to the Day Division of the University must submit a Medical Examination Report on the form provided by the Director of Admissions. The medical report is not required until the student has received formal notification of acceptance.

Dates of Entry for New Undergraduate Students

Students are admitted as Day and Evening undergraduates to the Winter Session (September to April) in September. Commencing with the 1972 Summer Session, students will also be admitted as evening undergraduates in May.

Deadline for Receipt of Applications

Applications for admission to undergraduate studies (all Faculties and years) must be received by the Office of Admissions prior to the following dates:

DAY DIVISION, WINTER SESSION (September to April) March 1
EVENING DIVISION, WINTER SESSION (September to April) June 1.

COURSE NUMBERS

The symbol "N-" designates courses officially approved for the new three-year programme. Students currently enrolled in the old four-year undergraduate programme will use the bracketed course numbers when registering. They should consult the 1970-71 undergraduate announcement for course descriptions.

V
faculty of arts

CURRICULUM FOR THE DEGREE OF
BACHELOR OF ARTS

ADMISSION REQUIREMENTS

General admission requirements are listed on page 46 .

Specific requirements for admission to the various programmes in the Faculty of Arts are as follows:

Applied Social Science
Economics
Geography   } One full course in Mathematics
Political Science
Sociology & Anthropology

English
French   } One full course in English Literature (in addition to compulsory collegial Language and Literature courses). One full course in French.
Moving Pictures
Theatre Arts

Classics
Modern Languages   } One full course in English Literature (in addition to compulsory collegial Language and Literature courses).

One full course in French.

At least one, and preferably two full courses in the language(s) to be studied.

Psychology   } Mathematics 002, 003, 005 (CEGEP 101, 103, 203).

Biology 001 (CEGEP 301).

Psychology 011 (CEGEP 101, 201).

Mathematics   } Mathematics 002, 003, 004, 005 (CEGEP 101, 103, 105, 203)

Religion   One full course in Philosophy

Other programmes   No specific requirement

NOTE - Quebec universities have agreed to admit to the appropriate undergraduate programme any collegial student successfully completing one of the above programmes provided of course that resources are sufficient. When all such qualified students have been admitted, the University reserves the right to admit students who may not have all the specified prerequisites according to its own criteria.

DEGREE REQUIREMENTS

Students preparing for the degree of Bachelor of Arts will take 15 course-credits. A course-credit is a curriculum unit based usually on 3 lecture hours per week for an academic year, plus other scheduled activities, which in some cases may replace lecture hours, and personal work; or, in the case of the Evening division, the accepted equivalent. A three-hour course followed for one term only is therefore a half-course and represents a half credit. In programme requirements, etc., the term "credit" and "half credit" are therefore used to denote "full course" and "half course" respectively.

Graduation with the degree of Bachelor of Arts requires

1. Successful completion of a programme of concentration in the form of a major or an honours programme as listed below.

2. A maximum of eight 200-level course-credits out of the fifteen course-credits required for the degree.

3. Students taking a joint major, an interdisciplinary major, a departmental major, or a departmental honours must take at least *four* of their fifteen course-credits outside of their department(s) of concentration. (In the case of interdisciplinary majors "department of concentration" shall be taken to refer to any department in which the student takes five or more course-credits.)

These four course-credits shall be selected according to the following rules:

A - Two course-credits shall be outside of the department(s) of concentration but may be in the same division of the Faculty.

B - Two course-credits in another division of the Faculty or in another Faculty.

4. Students taking an interdisciplinary honours programme or a combined honours programme must take at least three course-

credits outside of their division of concentration if the respective departments of concentration are in the same division, and outside of their departments of concentration if the respective departments are in different divisions.

CONCENTRATION REQUIREMENT

Since the CEGEP programme is designed to give all students the opportunity to explore different fields and thus acquire a broad general basis for further study, the undergraduate programme in Arts requires some degree of specialization, according to the interests and capacities of the student. The two main forms of specialization are the major, which requires that the student be successful in a prescribed pattern of courses, and honours, which involve not only a greater degree of concentration, but also a high level of academic performance.

In order to graduate, therefore, a student must have completed one of the following types of programme: a joint major programme (with two components); an interdisciplinary major programme; a departmental major programme; a combined honours programme; an interdisciplinary honours programme; a departmental honours programme.

Prior to registration, students will be required to select one of the types of programme outlined above. In the case of honours, students will register upon entry in an honours *programme,* but their acceptance as honours *students* will depend on their performance during their first year. Students failing to meet requirements for honours standing will proceed as majors.

The requirement of selecting upon entry a major or honours programme should not be thought of as being necessarily a final commitment. The Arts programme is designed to be flexible enough to allow for changes of orientation, subject, of course, to limitations in the case of certain programmes in great demand.

MAJOR PROGRAMMES

Department	Representative
Applied Social Science	R. McDonald
Art History	S. Horner
	D. Jones
	J. Miller
Art History and Studio Art	S. Horner
	D. Jones
	J. Miller

Art Education	S. Horner
	D. Jones
	J. Miller
Canadian Politics	H. Shulman
Canadian Studies	M. Gnarowski
Comparative Political Studies	K.J. Hermann
Economics	P. Miles
Early Childhood Education	M. Braham
Education	M. Braham
English	R. Tobias
Fine Arts	D. Jones
French	C. Lévy
Geography	J.W. Young
German	A.M. Ketter
Graphic Design	S. Horner
	D. Jones
	J. Miller
Greek	P.F. Widdows
Hebrew	J. Macaluso
History	E.E. McCullough
Humanities of Science	G. Cadenhead
	F. Knelman
International Affairs	L. Singh
Judaic Studies	J. Siegal
Latin	P.F. Widdows
Linguistics	C.R. Barton
Moving Pictures	E. Bakony
Music	P. Cohen
Philosophy	D. Laskey
Political Science	H. Quinn
Political Philosophy	H. Hutter
Psychology	B. Sanders
	N. Taylor
Religion	D.M. Miller
Russian	A.T. Sidorow
Russian Studies	A.T. Sidorow
Social Welfare	R. McDonald
Sociology	L. Cheong
	T. Synnott
Spanish	J.D. Grayson
Theatre Arts	N. Springford
Urban Studies	R.W. Bryant
Visual Arts	S. Horner
	D. Jones
	J. Miller

A "major" is an approved *sequence* of courses. It includes a minimum of seven courses and a maximum of ten. The concentration may include certain approved courses in other closely related fields. The term "major" as used by Sir George Williams University implies that the student has followed, within the requirements for the degree, a planned programme in a specialized field.

JOINT MAJOR PROGRAMMES

A "joint major" is made up of two approved *sequences* of five courses in two specific fields. The term "joint major" as used by Sir George Williams University implies that the student has followed, within the requirements for the degree, a planned programme of study in two specialized fields, with a lower degree of concentration in either than is afforded by a major programme.

A student may select any two of the proposed sequences of five courses to form his joint major. Each of these sequences is called a "joint major component".

REQUIREMENTS FOR MAJORS

Applied Social Science

The following courses, in an approved sequence, constitute a major in Applied Social Science.

Four credits from Applied Social Science (excluding Applied Social Science N-461).

One credit chosen from Psychology N-302*, N-303*, N-304*, N-305*, N-404*, N-405*.

One credit chosen from Sociology N-441*, N-442, N-443*, N-444*.

One credit chosen from Applied Social Science, Psychology, Sociology, or Management N-340* and N-341*.

Canadian Politics

The following courses, in an approved sequence, constitute a major in Canadian Politics:

A. Political Science N-231, N-330, N-333, N-436*, N-437*.

B. One other credit in Political Science.

Half course

C. Three credits with relevant Canadian content from other departments. The courses must be approved by the Department of Political Science.

Canadian Studies

Purpose of the Programme

The purpose of the programme is to provide an inter-disciplinary course of study in the social, political and cultural patterns of Canadian civilization, and to prepare students for research and advanced work in a wide number of areas of Canadian life. The programme is broadly based, and within its interdisciplinary range offers special emphasis in history, literature, the fine arts, religion, economics and political science.

Programme Structure

Students electing this programme proceed to a Major in Canadian Studies based on an approved sequence of courses which includes four core courses (Group A), and a range of electives (Groups B & C).

The following courses, in an approved sequence, constitute a major in Canadian Studies:

A. English N-244, French N-211, Geography N-341, History N-221.

B. At least three credits chosen from English N-444, N-448*, Art N-249, N-444, French N-331, N-431*, N-432*, Religion N-463, Economics N-434, N-446*, Education N-443*, History N-322, Political Science N-330, N-437*.

C. Two courses with Canadian content chosen in consultation with the coordinator of the Canadian Studies programme.

D. Canadian Studies N-411 to be taken in the fourth year.

Canadian Studies Committee

Robin B. Burns (History)
Michael Gnarowski (English, *Co-ordinator*)
Russell J. Harper (Fine Arts)

Half course

Comparative Political Studies

The following courses, in an approved sequence, constitute a major in Comparative Political Studies:

A. Political Science N-240, N-352*, N-354*, N-356, N-451.

B. One credit at the '300' or '400' level in Political Science.

C. Three credits with relevant comparative or area studies content from other departments. The courses must be approved by the Department of Political Science.

Early Childhood Education

The following courses, in an approved sequence, constitute a major in Early Childhood Education:

Education N-201, Psychology N-211, Sociology N-210, Philosophy N-210 or a '200' level History.

Education N-215, N-261, N-421, N-453*, N-461.

Education N-416*, N-417*; Education N-430 or N-441 or N-451.

NOTE: Every student unless specifically exempted by the director of the programme is required to undertake an internship.

Economics

The following courses, in an approved sequence, constitute a major in Economics:

Economics N-211 or N-212.

Economics N-311 or N-312.

Economics N-316 or N-318.

One Economic history credit chosen from among Economics N-330, N-430, N-434, N-438.

Economics N-275*, or Quantitative Methods N-243* and N-244*, or equivalent.

The remainder of 7 credits to be chosen from among all other Economics courses.

English

The following courses, in an approved sequence, constitute a major in English:

Three credits chosen from English N-253, N-431, N-434, N-435, N-436, N-437, N-454, N-467.

Two credits chosen from English N-244, N-261*, N-266*, N-277, N-444, N-445, N-446, N-447*, N-453*, N-455, N-461*, N-462*, N-463, N-464*, N-468, N-475, N-481, N-483.

Two additional credits in English.

French

The following courses, in an approved sequence, constitute a major in French.

French N-214 or N-310, N-221, N-241, N-331.

Four credits in French at the '300' or '400' level chosen in consultation with the Department.

Geography

The following courses, in an approved sequence, constitute a major in Geography:

Geography N-211, N-261 or N-262, N-271, N-355*, N-391*.

Three additional '300' or '400' level credits in Geography. At least one, and no more than two of these credits must be chosen from Geography N-341, N-343, N-345, N-346.

German

The following courses, in an approved sequence, constitute a major in German.:

German N-211, N-241, N-452, N-453, N-454, N-455.

Two credits chosen from German N-451, N-456*, N-457*, N-458*, N-459*.

It is recommended that a student majoring in German take one additional credit chosen from Linguistics N-211, Philosophy N-211, N-361, Religion N-443, History N-336, Political Science N-351, Geography N-423, Latin N-210 or N-240.

History

The following courses, in an approved sequence, constitute a major in History:

First Year: History N-210 and one additional course at the '200' level.

Second Year: Two credits in History, one of which may be at the '200' level.

Third Year: Two credits in History and two credits in related disciplines or in History, as approved by the Department. At least one of the History credits must be at the '400' level.

NOTE: Students must include one credit in Canadian History among their electives.

Humanities of Science

The following courses, in an approved sequence, constitute a major in the Humanities of Science:

A. Humanities of Science N-211 and N-212; Philosophy N-321.

B. Humanities of Science N-271 and N-441*; one credit chosen from Humanities of Science N-261, N-431*, N-451, N-461; Philosophy N-421.

C. One credit chosen from Humanities of Science N-471*, Archaeology 211*, 212*.

It is suggested that students following this programme may be interested in taking History N-333 or one credit chosen from Sociology N-453*, N-450.

International Affairs

The following courses, in an approved sequence, constitute a major in International Affairs:

Political Science N-270, N-385, N-481, N-483.

One '400' level credit in Political Science.

Three credits with relevant international content from other departments. The courses must be approved by the Department of Political Science.

Judaic Studies

The following courses, in an approved sequence, constitute a major in Judaic Studies:

* Half course

A. Hebrew N-210 or equivalent; Religion N-251*, N-252*, N-262; one credit chosen from Religion N-213, N-231, N-241.

B. Religion N-415*, N-416*; one credit chosen from Religion N-411*, N-412*, N-413, N-461.

C. Religion N-453; one credit chosen from Religion N-432, N-443, N-444, N-462, N-491, N-492.

Mathematics

The following courses, in an approved sequence, constitute a major in Mathematics:

Mathematics N-241, N-261, N-271*, N-281, N-291*, N-361, N-391*.

Two and a half additional credits in Mathematics, approved by the Department.

Mathematics (Optimization):
The following courses, in an approved sequence, constitute a major in Mathematics (Optimization):
Mathematics N-241, N-261, N-271*, N-281, N-291*, N-312*, N-331, N-351*, N-431, and one other course in Mathematics or related fields approved by the department

Philosophy

The following courses, in an approved sequence, constitute a major in Philosophy:

Philosophy N-210 or N-211 or the Collegial or other equivalent.

Two credits chosen from Philosophy N-221, or N-321, N-369, N-405.

Three credits chosen from Philosophy N-301, N-321, N-369, N-396*, N-401, N-403, N-405, N-407, N-421, N-431, N-493, N-495, N-496*.

Two additional credits in Philosophy.

Religion N-443 or N-444, Political Science N-311, or Education N-411 may be substituted for one of the '400' level credits in Philosophy with the approval of the Department Chairman.

* Half course

Political Philosophy

The following courses, in an approved sequence, constitute a major in Political Philosophy:

A. Political Science N-210; Philosophy N-210 or N-211.

B. Political Science N-311; one credit chosen from Political Science N-413, N-415; one credit chosen from Philosophy N-372*, N-374*, N-376*, N-403.

C. One credit chosen from Political Science N-458, Philosophy N-369, Sociology N-430.

Political Science

The following courses, in an approved sequence, constitute a major in Political Science:

Political Science N-210, N-240, N-270.

Three '300' level credits, one from each of the Areas of Political Science.

One '400' level credit.

NOTE: – For a breakdown of the Areas see section on departmental offerings.

Psychology

The following courses, in an approved sequence, constitute a major in Psychology:

Psychology N-271 or N-273, N-412.

Five credits chosen from among Psychology N-241 or N-242, N-275*, N-413, N-421, N-422, N-428, N-432, N-434, N-438, N-442, N-452, N-454, N-461, N-462, N-471, N-481, N-482, N-491*, N-492*, N-493*, N-494*. At least one of these five credits must be from among Psychology N-421, N-422, N-432, N-461.

NOTE – Students planning to do graduate work in Psychology or related fields should take Psychology N-241 or N-242 in their first or second year.

History and Philosophy of Religion

The following courses, in an approved sequence, constitute a major in History and Philosophy of Religion:

A. Three credits chosen from Religion N-213, N-231, N-251*, N-252*, N-262, N-463, N-464.

B. Two credits chosen from Religion N-411*, N-412*, N-413, N-415*, N-416*, N-461.

C. Two credits chosen from Religion N-432, N-435, N-443, N-444, N-453, N-454, N-462, N-491, N-492.

* Half course

Sociology

The following courses, in an approved sequence, constitute a major in Sociology.

One credit chosen from Area I.
One credit chosen from Area II.
One credit chosen from Area III.
One credit chosen from Area IV.

One additional credit chosen from either Area I, Area II, Area III, or Area IV.

Two credits from outside the department chosen in consultation with the Major Advisor.

Note: For a breakdown of the Areas see section on departmental offerings.

Social Welfare

The following courses, in an approved sequence, constitute a major in Social Welfare:

A. At the introductory level: Economics N-211, Political Science N-210, Psychology N-211, Sociology N-210.

B. Two additional credits in Sociology and two additional credits in at least one of the other three fields named above.

C. Applied Social Science, N-461; Psychology N-241 or Sociology N-241*.

Spanish

The following courses, in an approved sequence, constitute a major in Spanish:

Spanish N-221, N-241.

Linguistics N-221.

Four credits chosen from Spanish N-411, N-451, N-452, N-453, N-454, N-455.

Should a student wish to extend beyond the required seven credits it is recommended that he take the courses in Arabic and/or Portuguese.

Statistics

The following courses, in an approved sequence, constitute a major in Statistics:

* Half course

Mathematics N-241, N-261, N-271*, N-281, N-291*, N-341*, N-342*, N-343*, N-351*, N-352*, and one and one-half other courses in Mathematics or related field approved by the department.

Urban Studies

The following courses, in an approved sequence, constitute a major in Urban Studies:

Economics N-211 or N-212; Geography N-211; Political Science N-240 or N-330; Sociology N-210.

Economics N-275* or Geography N-262 or Sociology N-241* and the remainder of 1 ½ credits chosen from Economics N-274*, Geography N-261, Political Science N-210, Sociology N-411.

Economics N-426*, Geography N-331, Sociology N-441*, N-448*, Political Science N-334*.

An additional one and one-half credits chosen from Economics N-404*, N-405*, N-427*, N-446*, Geography N-355*, N-434, N-455*, N-456*, N-457*, N-459*, Political Science N-333, Sociology N-440*, N-453*, N-450, N-454.

Other courses can be substituted with permission of the Urban Studies Committee. No more than one of the one and one-half credits can be taken in any one department.

REQUIREMENTS FOR JOINT MAJORS

A "joint major" is made up of any two "joint major components" selected by the student from the following list.

JOINT MAJOR COMPONENTS

Applied Social Science

The following courses constitute the joint major component in Applied Social Science:

Five credits chosen from Applied Social Science, N-212, N-341*, N-351*, N-400, N-411*, N-413, N-421*, N-431, N-441*, N-451*, N-452*, N-471, N-481, N-482, N-485*, N-486*.

Half course

Art History

The following courses constitute the joint major component in Art History:

Art N-342, N-343, N-444.

Two credits chosen from among Art N-341, N-345, N-441, N-443, N-445, N-446.

Economics

The following courses constitute the joint major component in Economics:

Economics N-211 or N-212.

Economics N-311 or N-312.

Economics N-316 or N-318.

Two additional credits in Economics.

Education

The following courses constitute the joint major component in Education:

Education N-201, N-421, N-430, N-441, N-451.

English

The following courses constitute the joint major component in English:

Three credits from English N-253, N-431, N-434, N-435, N-436, N-437, N-454, N-467.

Two credits chosen from English N-244, N-261*, N-266*, N-277, N-444, N-445, N-446, N-447*, N-453*, N-455, N-461*, N-462*, N-463, N-464*, N-468, N-475, N-481, N-483.

French

The following courses constitute the joint major component in French:

Half course

French N-214, or N-310.

Two credits chosen from French N-221, N-241, N-331.

Two '300' or '400' level credits in French.

Geography

The following courses constitute the joint major component in Geography:

Geography N-211, N-271.

Geography N-261 or N-262.

Two additional credits in Geography.

German

The following courses constitute the joint major component in German:

German N-211, N-241.

Three credits chosen from German N-451, N-452, N-453, N-454, N-455, N-456*, N-457*, N-458*, N-459*.

Greek

The following courses constitute the joint major component in Greek:

Classics N-221.

Four credits chosen from Greek N-241, N-441, N-442. Classics N-443, N-444.

Hebrew

The following courses constitute the joint major component in Hebrew:

Hebrew N-241, N-441, N-442, N-451.

Linguistics N-221 or Arabic N-411.

History

The following courses constitute the joint major component in History:

*Half course

History N-210.

One credit chosen from History N-221, N-251, N-261.

Two '300' level credits in History.

One additional '300' or '400' credit in History.

Humanities of Science

The following courses constitute the joint major component in the Humanities of Science:

Three credits chosen from Humanities of Science N-211, N-212, N-261, N-271.

Two credits chosen from remainder of Humanities of Science N-431*, N-441*, N-451, N-461, N-471*.

Latin

The following courses constitute the joint major component in Latin:

Classics N-221.

Four credits chosen from Latin N-241, N-441, N-442, Classics N-443, N-444.

Linguistics

The following courses constitute the joint major component in Linguistics:

Linguistics N-221, N-421, N-431, N-441.

One credit chosen from Arabic N-411, Linguistics N-451, N-452, English N-280, N-481, French N-312, N-417.

Mathematics

The following courses constitute the joint major component in Mathematics:

Mathematics N-241, N-261, N-271*, N-281, N-291*, and one additional full course approved by the Department in Mathematics or a related field.

*Half course

Moving Pictures

The following courses constitute the joint major component in Moving Pictures:

Five credits chosen from Moving Pictures N-211, N-212, N-311, N-312, N-411, N-412, N-431.

Music

The following courses constitute the joint major component in Music:

Five credits chosen from Music N-235, N-245, N-321*, N-335, N-341*, N-342*, N-343*, N-345*, N-351*, N-352*, N-421, N-465*, N-471*, N-485*.

Philosophy

The following courses constitute the joint major component in Philosophy:

Two credits chosen from Philosophy N-221 or N-321, N-369, N-405.

Three credits chosen from Philosophy N-301, N-321, N-369, N-396* N-401, N-403, N-405, N-407, N-421, N-431, N-493, N-495, N-496*.

Philosophy of Education

The following courses constitute the joint major component in Philosophy of Education:

Education N-201, N-430, N-441, N-490*, N-491*, N-492*, N-493*.

Political Science

The following courses constitute the joint major component in Political Science:

Political Science N-210, N-240, N-270.

One '300' level credit in Political Science.

One '300' or '400' level credit in Political Science.

* Half course

Psychology

The following courses constitute the joint major component in Psychology:

Psychology N-271.

Four credits chosen from Psychology N-241 or N-242, N-412, N-421, N-422, N-428, N-432, N-434, N-438, N-442, N-452, N-454, N-461, N-462, N-481, N-482.

Religion

The following courses constitute the joint major component in Religion:

Two credits chosen from Religion N-213, N-231, N-241, N-251*, N-252*, N-262.

Three credits chosen from Religion N-411,* N-412*, N-413, N-415*, N-416*, N-432, N-435, N-443, N-444, N-453, N-454, N-461, N-472, N-463, N-491.

Russian

The following courses constitute the joint major component in Russian:

Russian N-231, N-241, N-451, N-452, N-453.

Sociology and Anthropology

The following courses constitute the joint major component in Sociology and Anthropology.

One credit chosen from Area I.

One credit chosen from Area II.

One credit chosen from Area III.

One credit chosen from Area IV.

One additional credit chosen from either Area I, Area II, Area III or Area IV.

NOTE – For a breakdown of the Areas see section on departmental offerings.

* Half course

Spanish

The following courses constitute the joint major component in Spanish:

Spanish N-221, N-241.

Three credits chosen from N-411, N-451, N-452, N-453, N-454, N-455.

Theatre Arts

The following courses constitute the joint major component in Theatre Arts:

Theatre Arts N-212, N-255.

Three credits chosen from Theatre Arts N-247, H-312, N-315, N-331, N-355, N-421, N-431, N-455.

Visual Arts

The following courses constitute the joint major component in the Visual Arts:

Two to three credits chosen from Art N-210*, N-211*, N-311*, N-312*, N-331*, N-338*, N-370*, N-400*, N-401*, N-438*.

The remainder of the five credits chosen from Art N-341, N-342, N-343, N-345, N-441, N-443, N-444, N-445, N-446.

HONOURS PROGRAMMES

Department	Representative
Economics	Muriel.Armstrong, Professor of Economics
Mathematical Economics	Arthur Lermer, Professor of Economics
English	Rytsa Tobias, Associate Professor of English
French	Claude Levy, Assistant Professor of French
Geography	James Young, Assistant Professor of Geography
History	Robert Wall, Associate Professor of History
Philosophy	Robert Carter, Associate Professor of Philosophy
Political Science	Lalita Singh, Associate Professor of Political Science
Psychology	Thomas Gray, Assistant Professor of Psychology
Religion	To be announced
Sociology and Anthropology	Gordon Laing, Assistant Professor of Sociology

The University has approved programmes leading to an Honours degree in certain selected fields. An Honours degree indicates

* Half course

specialization within a field and high academic standing. In order to qualify for an Honours degree a student must meet all of the academic qualifications and comply with the regulations set forth below.

1. A candidate for an Honours degree should indicate such intention at registration, and consult the Honours representative of the department(s) concerned as soon as possible. His Honours standing will be reviewed annually. However, a student who has followed the courses prescribed for the Honours programme and has met all the requirements may enter the programme, with the approval of the Honours Representative any time before beginning the final five courses. No retroactive approval of entry may be granted.

2. An Honours student must meet the general degree requirements as well as the specific requirements for an Honours degree, and must obtain at least a 'C' average over the total degree programme. Failure in any course will mean suspension from the Honours programme. Reinstatement is possible only by recommendation by the Honours representative.

3. An Honours student must obtain a 'B' average with no grade lower than 'C' in all courses in the basic Honours programme.

4. A student who enters with advanced standing may apply pro tanto credits, which are applicable, to the Honours degree requirements, upon approval by the Department.

5. A student shall be allowed to qualify for only one Honours degree in either a single or combined Honours programme.

6. Honours standing in any programme is granted upon graduation only with the approval of the University Council.

REQUIREMENTS FOR HONOURS

Economics

The following courses constitute an Honours programme in Economics, provided the student maintains the required academic standing:

Pattern A

Economics N-211 or N-212; N-311 or N-312; N-318, N-415.

Economics N-270* and N-271* or Mathematics N-203 and N-205, or equivalent.

Economics N-275* or Quantitative Methods N-243* and 244*, or equivalent.

* Half course

The remainder of 10 credits to be chosen from among all other Economics courses.

Pattern B (emphasis on Mathematical Economics)

Economics N-211 or N-212, N-312, N-318, N-415, N-476*, N-477*.

Economics N-270* and N-271* or Mathematics N-203 and 205, or equivalent.

Economics N-275* or Quantitative Methods N-243* and 244*, or equivalent.

One economic history credit chosen from among Economics N-330, N-430, N-434, N-438.

The remainder of 10 credits to be chosen from among Economics N-412*, N-413*, N-442, N-443, N-470*, N-471*.

English

The following courses constitute an Honours programme in English, provided the student maintains the required academic standing:

Three credits chosen from English N-253, N-431, N-434, N-435, N-436, N-437, N-454, N-467.

Two credits chosen from English N-244, N-261*, N-266*, N-277, N-444, N-445, N-446, N-447*, N-453*, N-455, N-461*, N-462*, N-463, N-464*, N-468, N-475, N-481, N-483.

Three additional credits in English.

NOTE - Before following a plan of study, students are advised to consult with the Department.

English and Religion

The following courses constitute an Honours programme in English and Religion, provided the student maintains the required academic standing:

Pattern A (emphasis on the historical)

A. English N-253; N-431 or N-455. Two credits chosen from English N-434, N-435, N-436, N-437, N-445, N-454, N-431 or N-455. One credit chosen from English N-447*, N-453*, N-467, N-471*, N-475, N-492.

* Half course

B. Religion N-251*, N-252*. One credit chosen from Religion N-213, N-231, N-241, N-262, N-463. Religion N-461, N-462. One credit chosen from Religion N-443, N-444, N-491. One credit chosen from Religion N-411*, N-412*, N-413, N-415*, N-416*, N-453, N-454.

Pattern B (emphasis on the contemporary)

A. English N-253. Two credits chosen from English N-244, N-431, N-435, N-436, N-445. English N-437 or N-446. One credit chosen from English N-461*, N-462, N-464*, N-467, N-475, N-492.

B. Four credits chosen from Religion N-213, N-231, N-241, N-251*, N-252*, N-443, N-444, N-463. Two credits chosen from Religion N-411*, N-412*, N-413, N-415*, N-416*, N-491.

It is strongly recommended that an Honours student in English and Religion planning to do graduate work acquire a good reading knowledge of French, German, Greek, Hebrew, or Latin.

French

The following courses constitute an Honours programme in French, provided the student maintains the required academic standing:

Pattern A (emphasis on Literature)

French N-214, N-310, N-221, N-241, N-331, N-491.

Four additional credits in French Literature.

Pattern B (emphasis on Linguistics)

French N-221, N-241, N-331.
French N-312, N-314, N-410, N-417.
Three credits in French at the '300' or '400' level.

Geography

The following courses constitute an Honours programme in Geography, provided the student maintains the required academic standing:

Pattern A (emphasis on Physical Geography)

First and
Second Years: Geography N-211, N-261, N-262, N-271, N-355*, N-

* Half course

391*. One credit chosen from Geography N-371, N-372, N-373.

Second and Third Years:
Geography N-491. One credit chosen from N-341, N-343, N-345. Two credits chosen from Geography N-371, N-372, N-373, N-474, N-475. One credit chosen from any '300' or '400' level Geography courses other than those listed above.

Pattern B (emphasis on Human Geography)

NOTE: – Students taking this pattern may specialize in Historical Geography.

First and Second Years:
Geography N-211, N-261, N-271, N-355*, N-391*.

Second and Third Years:
Geography N-491. One or two credits chosen from Geography N-241, N-343, N-345, N-346. Three or four credits chosen from Geography N-316, N-321, N-412, N-421, N-422, N-423. One credit chosen from any '300' or '400' level Geography courses other than those listed above.

Pattern C (emphasis on Economic Geography)

NOTE - Students taking this pattern may specialize in Urban Geography.

First and Second Years:
Geography N-211, N-261, N-262, N-271, N-355*, N-391*.

Second and Third Years:
Geography N-491. One credit chosen from Geography N-341, N-343, N-345. Three credits chosen from Geography N-331, N-357, N-455*, N-456, N-457*, N-458*, N-459*. One credit chosen from any '300' or '400' level Geography courses other than those listed above.

History

The following courses constitute an Honours programme in History, provided the student maintains the required academic standing:

First Year:
History N-210 and two additional credits at the '200' level, one of which may be in a related discipline as approved by the Department.

* Half course

Second Year:
History N-390 and two additional credits in History, one of which may be at the '200' level, provided that no more than three '200' level History credits are taken, including History N-210.

Third Year:
History N-490 and one additional credit in History at the '400' level. Two additional credits in History must be taken with the proviso that the student may substitute one of these credits with an approved course in a related discipline.

NOTE - Students must include one credit in Canadian History among their electives.

History and Philosophy of Religion

The following courses constitute an Honours programme in the History and Philosophy of Religion, provided the student maintains the required academic standing:

A. Religion N-251*, N-252*. One credit chosen from Religion N-213, N-231, N-241, N-262.
B. Religion N-461 or N-462 or N-463. One credit chosen from Religion N-411*, N-412*, N-413, N-415*, N-416*.
C. Religion N-443, N-444, N-491; three additional credits in Religion, at least two of which must be at the '400' level.

One credit in a related subject may be substituted for one of the credits specified above, with the approval of the Chairman of the Department.

It is strongly recommended that an Honours student in the History and Philosophy of Religion planning to do graduate work acquire a good reading knowledge of French, German, Greek, Hebrew, or Latin.

History and Religion

The following courses constitute an Honours programme in History and Religion, provided the student maintains the required academic standing:

Pattern I (Asia)

A. History N-210, N-261, N-361, N-362, N-390.

* Half course

B. Religion N-213, N-411*, N-412*, N-413.

C. Sociology N-210, N-424.

Any '400' level course in History or Religion may be substituted for any one credit with the approval of the programme advisor. Students who are interested in comparative aspects of Islamic development are reminded that History N-365 is available.

Pattern II (Europe)

A. History N-210, N-390.

B. One credit selected from Religion N-213, N-231, N-241.

C. Seven credits selected from:
History N-331, N-332, N-333, N-336; Religion N-262, N-443, N-461, N-462; Sociology N-210, N-424.

NOTE: - Students electing to take Sociology N-210 in the Honours programme must take Sociology N-424 as well.

Mathematics

The following courses constitute an Honours programme in Mathematics, provided the student maintains the required academic standing:

First Year: Mathematics N-241, N-261, N-271*, N-281, N- 291*.

Second Year: Mathematics N-361, N-366*, N-371*, N-381*, N-391*, and one other full credit or equivalent approved by the department from among:
Mathematics N-311*, N-312*, N-321*, N-322*, N-331, N-351*, N-392*.

Third Year: Mathematics N-461, N-466*, N-467*, N-491*, N-492* and one other full credit or equivalent approved by the department from among:
Mathematics N-431, N-432*, N-451*, N-471*, N-475* and second year options not taken previously.

NOTE: - Students with a strong interest in optimization may receive departmental permission to take Mathematics N-312*, N-331, N-351* as their options and to replace Mathematics N-467* and N-492* by Mathematics N-431, and Mathematics N-491* by Mathematics N-432*.

Philosophy

The following courses constitute an Honours programme in Philosophy, provided the student maintains the required academic standing:

* Half course

Philosophy N-210 or N-211 or the Collegial or other equivalent.

Philosophy N-380.

Two credits chosen from Philosophy N-221, N-271, N-273, N-301.

Philosophy N-221 or N-321 or N-369.

Two credits in Philosophy at the '300' level.

Philosophy N-369 or N-405.

Two credits chosen from Philosophy N-401, N-403, N-405, N-407, N-421, N-431, N-493, N-495, N-496*.

It is strongly recommended that an Honours student in Philosophy planning to do graduate work acquire a good reading knowledge of a modern language related to his field of interest.

Philosophy and Education

The following courses constitute an Honours Programme in Philosophy and Education, provided the student maintains the required academic standing:

Psychology N-211.

One credit chosen from Psychology N-212*, N-213*, N-302*, N-303*, N-434.

One credit chosen from Education N-451 or Sociology N-451.

Education N-430.

Education N-441 (prerequisite, one ' 200' level credit in History).

Education N-480 (This course must be taken concurrently with Philosophy N-480).

Philosophy N-210 or N-211 or the Collegial or other equivalent.

Philosophy N-380.

Philosophy N-221 or N-321 or N-369.

One credit chosen from Philosophy N-231, N-271, N-273, N-301, N-321, N-369, N-372*, N-374*, N-376*, N-378*, N-396*, N-401, N-403, N-405, N-407, N-431, N-493, N-496*.

* Half course

Philosophy N-369 or N-405.

Philosophy N-480 (This course must be taken concurrently with Education N-480).

Philosophy and English

The following courses constitute an Honours Programme in Philosophy and English, provided the student maintains the required academic standing:

Three credits chosen from English N-253, N-431, N-434, N-435, N-436, N-437, N-454, N-467.

Three credits chosen from English N-244, N-261*, N-266*, N-277, N-445, N-446, N-447*, N-453*, N-455, N-461*, N-462*, N-463, N-464*, N-468, N-475, N-481, N-483.

Philosophy N-210 or N-211 or the Collegial or other equivalent.

Philosophy N-380.

Philosophy N-221 or N-321 or N-369.

One credit chosen from Philosophy N-231, N-271, N-273, N-301, N-361, N-369, N-372*, N-374*, N-376*, N-378*.

Philosophy N-369 or N-405.

One credit chosen from Philosophy N-321, N-365, N-396*, N-401, N-403, N-405, N-407, N-431, N-493, N-496*, Humanities N-340*.

Philosophy and Religion

The following courses constitute an Honours Programme in Philosophy and Religion, provided the student maintains the required academic standing:

Two credits chosen from Religion N-213, N-231, N-241, N-251*, N-252*.

Religion N-443.

One credit chosen from Religion N-461, N-462, N-463.

Religion N-444.

Half course

One credit chosen from Religion N-411*, N-412*, N-413, N-415*, N-416*, N-491, N-492.

Philosophy N-210 or N-211 or the Collegial or other equivalent.

Philosophy N-380.

Philosophy N-221 or N-321 or N-369.

One credit chosen from Philosophy N-231, N-271, N-273, N-301, N-361, N-363, N-365, N-369, N-372*, N-374*, N-376*, N-378*.

Philosophy N-369 or N-405.

One credit chosen from Philosophy N-321, N-365, N-396*, N-401, N-403, N-405, N-407, N-431, N-493, N-496*.

Political Science

The following courses constitute an Honours programme in Political Science, provided the student maintains the required academic standing:

Political Science N-210, N-240, N-270, N-330.

Four '300' or '400' level credits. At least one credit from each of the Areas of Political Science.

Political Science N-415, N-491.

NOTE: - For a breakdown of the Areas see section on departmental offerings.

Psychology

The following courses constitute an Honours programme in Psychology, provided the student maintains the required academic standing:

First Year: Psychology N-241 or N-242, N-273 (see NOTE), N-412.

Second Year: Three credits chosen from among Psychology N-421, N-422, N-428, N-432, N-434, N-438, N-442 and N-461. In addition Psychology N-275* may be taken as an option.

Third Year: Psychology N-413, N-472. One credit chosen from among Psychology N-421, N-422, N-428, N-432, N-434,

Half course

N-438, N-442, N-452, N-454, N-461, N-462, N-481, N-482, N-491*, N-492*, N-493*, N-494*.

NOTE: - Students who have taken Psychology N-271 in their first year and who are then accepted into the Honours programme will be exempted from Psychology N-273, BUT MAY BE REQUIRED TO TAKE Psychology N-471 in their second year.

Religion and Sociology

The following courses constitute an Honours programme in Religion and Sociology, provided the student maintains the required academic standing:

A. Anthropology N-211, Religion N-213, Sociology N-210. One credit chosen from Religion N-231, N-241, N-251*, N-252*, N-463.

B. Two credits chosen from Religion N-411*, N-412*, N-413, N-415*, N-416*, N-461. Two credits chosen from Religion N-443, N-444, N-462, N-491: Sociology N-430 or N-431; N-481. One credit chosen from Anthropology N-423, Sociology N-424, N-443, N-446, N-494. One additional credit in Sociology chosen in consultation with the student's Honours advisor.

It is strongly recommended that an Honours students in Religion and Sociology planning to do graduate work acquire a good reading knowledge of French, German, Greek, Hebrew, or Latin.

Russian Studies

The following courses constitute an Honours Programme in Russian Studies, provided the student maintains the required academic standing:

Economics N-465*, (prerequisite: Economics N-211 or N-212), N-464*.

Russian N-210, N-231, N-241.

History N-341, N-342; Geography N-343.

Two credits chosen from Russian N-451, Russian N-452, Russian N-453, Philosophy N-365, Political Science N-352*, Religion N-464.

*Half course

Sociology

The following courses constitute an Honours programme in Sociology, provided the student maintains the required academic standing:

Sociology N-241*, N-411 and N-481.

One credit from Area II.

One credit from Area III.

One credit from Area IV.

One additional credit within the Department.

Three credits outside the Department chosen in consultation with the Honours Advisor. All three credits must be within the same department.

NOTE: For a breakdown of the Areas see section on departmental offerings.

Sociology and Philosophy

The following courses constitute an Honours Programme in Sociology and Philosophy, provided the student maintains the required academic standing:

Pattern A (Epistemology and Methodology)

Sociology N-210, or the Collegial or other equivalent.

One credit chosen from Anthropology N-211, or the Collegial or other equivalent, or Philosophy N-221.

Sociology N-241*, N-411, N-481.

One credit chosen from Sociology N-420, N-430, N-431.

Sociology N-422 or N-496.

One credit chosen from Philosophy N-210, N-211, N-221, or the Collegial or other equivalent.

Philosophy N-380.

Philosophy N-221 or N-321.

Philosophy N-369 or N-405.

*Half course

One half credit chosen from Philosophy N-372*, N-374*, N-376*.

One credit chosen from Philosophy N-321, N-369, N-396*, N-401, N-405, N-421, N-493, N-496*.

Pattern B (Man in Society)

Sociology N-210 or the Collegial or other equivalent.

Anthropology N-211 or the Collegial or other equivalent.

Sociology N-420, N-481.

One credit chosen from Sociology N-421, N-422, Anthropology N-423.

One credit chosen from Sociology N-442, N-443, N-444*, N-445*, N-446, N-447, N-454.

Philosophy N-210 or N-211.

Philosophy N-380.

One credit chosen from Philosophy N-221, N-321, N-369.

One credit chosen from Philosophy N-372*, N-374*, N-376*, N-378*.

Any two additional credits in Philosophy.

Statistics

The following courses constitute an Honours programme in Statistics, provided the student maintains the required academic standing:

First Year: Mathematics N-241, N-261, N-271*, N-281, N-291*.

Second Year: Mathematics N-351*, N-352*, N-361, N-366*, N-381*. N-391*, and one half-credit approved by the department from among:
Mathematics N-311*, N-312*, N-321*, N-341*, N-342*, N-343*.

Third Year: Mathematics N-371*, N-451*, N-452*, N-461, N-466*, and one full credit or equivalent approved by the department from among:

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* Half course

Mathematics N-331, N-431, N-441*, N-467*, N-471*, N-491*, N-492* and second year options not taken previously.

NOTE: Students with a strong interest in optimization may receive departmental permission to take Mathematics N-312, N-331 as their options, and to replace either Mathematics N-371* and N-466* or N-461 by Mathematics N-431.*

Urban Studies

The following courses constitute an Honours programme in Urban Studies, provided the student maintains the required academic standing:

Economics N-211 or N-212; Geography N-211; Political Science N-240 or N-330; Sociology N-210.

Economics N-275* or Geography N-262 or Sociology N-241* and the remainder of 1 ½ credits chosen from Economics N-274*, Geography N-261, Political Science N-210, Sociology N-441.

Economics N-426*; Geography N-331; Sociology N-441*; N-448*; Political Science N-334*.

Urban Studies N-491.

An additional two and one-half credits chosen from Economics N-404*, N-405*, N-427*, N-446*, Geography N-434, N-355*, N-455, N-456*, N-457*, N-459*, Political Science N-333, Sociology N-440*, N-453*, N-450, N-454.

Other courses can be substituted with permission of the Urban Studies Committee. No more than two of the two and one-half credits can be taken in any one department.

CURRICULUM FOR THE DEGREE OF BACHELOR OF FINE ARTS

Admission Requirements

General admission requirements are listed on page 46.

Specific requirements for admission to the various major programmes in Fine Arts are as follows:

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* Half course

Art History
Art History and Studio Art
Art Education
Fine Arts
Graphic Design
Theatre Arts
Visual Arts

} Two full studio courses, one Art History course-credit and one additional course-credit selected from Art History, Cinema, Music or Theatre Arts. An Education major should have one course-credit in Psychology and one course-credit in History or Philosophy.

Alternative requirements for entry to the Major in Art History (B.F.A.) or the Major in Fine Arts (B.F.A.): two full course-credits in Art History or permission of the Department of Fine Arts.

Alternative requirements for entry to the Major in Theatre Arts (B.F.A.): one course-credit in English Literature (in addition to general required courses) and one course-credit in French.

NOTE: - Quebec universities have agreed to admit to the appropriate undergraduate programme any collegial student successfully completing the above programme provided of course that resources are sufficient. When all such qualified students have been admitted, the University reserves the right to admit students who may not have all the specified prerequisites according to its own criteria.

A student without the necessary studio courses must take Art N-331* and Art N-360* as a prerequisite to other studio courses in the Visual Arts.

Degree Requirements

Students preparing for the degree of Bachelor of Fine Arts will take 15 course-credits. A full credit represents three hours of lecture work in class or six hours of studio work per week for a full academic year, or the approved equivalent in the Evening Division. (Students will be expected to complete a minimum of one hour of outside work per class hour). For students not enrolled in the Bachelor of Fine Arts programme a limited number of openings are available in Art N-210*, N-211*, N-331*, N-360*, and N-251. Courses open to all students include Art N-232, N-240, N-248, N-249, N-342, N-343, N-345, N-441, N-443, N-444, N-445, N-446, N-461.

Applications to transfer into the Bachelor of Fine Arts programme will be considered at the end of first year university studies after students have completed Art N-331* and Art N-360* The number of students accepted into BFA programmes will

Half course

depend upon the space available. Applicants will be considered on the basis of a portfolio of work (three-dimensional work should be photographed), recommendations by the instructors and any other relevant information. Students intending to apply for transfer to the Bachelor of Fine Arts at the end of first year should fill out the necessary forms available from the office of the Department of Fine Arts, by April 1st.

Students who have already completed courses in other colleges or universities and wish to apply for advanced standing will be granted credit on the basis of the programme at Sir George Williams University. A transcript, portfolio and/or slides of work should be submitted to the Department of Fine Arts at the time of application prior to March 1st and by appointment with the Department. Students seeking a second degree must complete a minimum of the last two academic years at Sir George Williams University, while students transferring credit towards a first degree must complete a minimum of one full academic year.

Graduation with the degree of Bachelor of Fine Arts requires:

1. Successful completion of a major programme.

2. A maximum of eight 200-level credits out of the fifteen course-credits required for the degree.

3. Students must take at least four of their 15 course-credits outside of the Department of Fine Arts.

These four course-credits shall be selected according to the following requirements:

A. Two course-credits shall be outside of the Department of Fine Arts but may be in the same division (Humanities) of the Faculty.

B. Two course credits in the other division of the Faculty (i.e. Social Sciences) or in another Faculty.

CONCENTRATION REQUIREMENT

Students must major in one of the following: Art Education, Art History, Art History and Studio Art, Fine Arts, Graphic Design, Theatre Arts or Visual Arts.

Prior to registration, students will be required to select one of the types of programme outlined above.

The requirement of selecting upon entry a major programme should not be thought of as being necessarily a final commitment. The Arts programme is designed to be flexible enough to allow for changes of orientation, subject, of course, to limitations in the case of certain programmes in great demand.

Diploma in Art Education

The Department of Fine Arts offers a one year course leading to the Sir George Williams University Diploma in Art Education.

This course is integrated with the Bachelor of Fine Arts, Art Education major to provide a continuous pattern of studies preparing art specialists for teaching in elementary and secondary schools.

In order to qualify for admission students must have completed the Sir George Williams University Bachelor of Fine Arts, Art Education major, or the equivalent. Graduates of other institutions will be considered if they have had the equivalent of an undergraduate major in studio work and can present an acceptable portfolio. They will be expected to make up the education, art education and psychology courses included in the Bachelor of Fine Arts, Art Education major.

The Diploma Course is offered in the Day Division only. Graduates who have been awarded the Diploma in Art Education meet the requirements for a Class I Specialists Certificate in Art, awarded by the Quebec Department of Education.

REQUIREMENTS FOR MAJORS

Art History (B.F.A.)

The following courses, in an approved sequence, constitute a major in Art History.

A. Art N-240, N-341, N-342, N-343, N-443, N-444, N-447.

B. A minimum of two credits or a maximum of 4 credits chosen from among Art N-240, Art N-345, N-441, N-445, N-446, N-460.

With permission of the Department, a student may substitute up to 2 credits for courses in Art History listed under B. These substitute courses may be selected from other sections of the Fine Arts Department, or from other departments. In any case the major will consist of a total of 10 credits.

NOTE - Students who have had the CEGEP equivalent of Art N-240 need not take it as part of their major programme but may elect to take it with the permission of the Department.

Art History and Studio Art (B.F.A.)

The following courses, in an approved sequence, constitute a major in Art History and Studio Art.

Art N-240.

Five credits chosen from Art N-341, N-342, N-343, N-345, N-441, N-443, N-444, N-446, N-447. A student may substitute one of Art N-360, N-460, N-461 for one of their credits in Art History.

Five credits in Studio courses in the Visual Arts which may include up to one credit in Theatre Arts N-255 or Moving Pictures N-211 or Music N-235 or N-335 or N-471* or N-485*.

Art Education (B.F.A.)

The following courses, in an approved sequence, constitute a major in Art Education.

Two to four credits in lecture and/or seminar courses in Art or Art History.

Art N-430*, N-432*, N-450.

The remainder of ten course-credits to be chosen among the courses in Visual Arts. Among these, a student may chose up to one and one half credits in Moving Pictures.

Students intending to apply for the Diploma in Art Education are required to take Education N-201, one '400' level course in Education, Psychology N-482.

Fine Arts (B.F.A.)

The following courses, in an approved sequence, constitute a major in Fine Arts.

Half course

Courses selected from at least three of the following sections with a maximum of four credits selected from any one section.

Visual Arts - Art History Section	Visual Arts Studio Section	Theatre Arts Section	Music Section	Moving Pictures Section
N-240	N-210*	N-247	N-235	N-211
N-342	N-211*	N-255	N-245	N-212
N-343	N-311*	N-315	N-341*	N-311
N-345	N-331*	N-331	N-343*	N-312
N-443	N-370*		N-345*	
N-444	N-400*		N-421	
N-445	N-430*			

Graphic Design (B.F.A.)

The following courses, in an approved sequence, constitute a major in Graphic Design.

Two credits in lecture and/or seminar courses in Art or Art History including a minimum of one credit in Art History.

Art N-338*, N-370*, N-371*, N-372*, N-471*. N-472*, N-473*, N-474*, N-475*,

Three and one half additional Studio Art credits.

Theatre Arts (B.F.A.)

The following courses, in an approved sequence, constitute a major in Theatre Arts.

Theatre Arts N-212, N-247, N-255, N-312, N-315, N-331, N-355, N-421, N-431, N-455.

Visual Arts (B.F.A.)

The following courses, in an approved sequence, constitute a major in Visual Arts.

Two credits in lecture and/or seminar courses in Art or Art History including a minimum of one credit in Art History.

Eight credits in Studio courses in the Visual Arts which may include up to one credit from Theatre Arts N-255, Moving Pictures N-311, N-312, Music N-235, N-335, N-471*, N-485*.

Half course

FACULTY OF ARTS

Ian L. Campbell, *Dean of the Faculty of Arts.*
Gerald Mahoney, *Assistant Dean of Arts (Students).*
Michel Despland, *Assistant Dean of Arts (Curriculum), on leave.*
Muriel Armstrong, *Acting Assistant Dean of Arts (Curriculum).*
Wynne Francis, *Assistant Dean of Arts (Priorities).*

COURSES

NOTE: – The numbers in brackets following the course numbers refer to the old four-year programme, and indicate comparable, but not necessarily equivalent, courses in that programme.

HUMANITIES OF SCIENCE

NOTE: – Courses in the Humanities of Science may be regarded as courses in the Humanities or in Social Science.

Gordon Cadenhead, *Assistant Professor of Humanities of Science and Chairman of the Department.*
Fred Knelman, *Professor of Humanities of Science.*
David W. Chambers, *Assistant Professor of Humanities of Science.*

Humanities of Science N-211 (211). Social History of Science

A study of the History and Influence of Scientific Thought from ancient times to the present. The interactions of natural sciences with philosophy and other humanistic disciplines will be considered as well as social interactions. (Full course).

NOTE: – Students who have credit for Natural Science 241 or Humanities of Science 011 may not take this course for credit.

Humanities of Science N-212 (212). Experiments in Science

This is a laboratory course in which a series of planned experiments in physics and chemistry both contemporary and classical will be performed. These will include experiments such as falling bodies, speed of light, momentum, laser, etc. Attention will be placed on scientific method, attitude and techniques. (Full course).

Humanities of Science N-261 (261). Biology and Social Change

The course is designed to acquaint students with the basic principles of biology and at the same time with the relevance of these principles to historical, contemporary and future social issues. Biological and genetic engineering, pollution, conservation, human ecology and the quality of life in a technological age will receive prominent attention. (Full course).

NOTE: – Students who have credit for Humanities of Science 061 may not take this course for credit.

Humanities of Science N-271 (271). Science and Society

The social context of science – examines the social aspects of the growth of modern science and its emergence as a social institution. The role of science in the industrial revolution; the distinctions among science, engineering and technology; the new industrial revolutions of the 20th century; science and ethics; science and government. (Full course).

NOTE: – Students who have credit for Humanities 220 or 071 may not take this course for credit.

Humanities of Science N-431 (431). The Scientific Revolution

The course considers the work of Copernicus, Galileo, Descartes and Newton and the development of scientific thought; the confrontation of science and social thought – the trial of Gallileo; the development of scientific bodies and communication; the significance of the Newtonian synthesis. (Half course).

Humanities of Science N-441 (441). The Darwinian Revolution

An examination of Darwin's theory of evolution emphasizing its empirical foundations and the theoretical context within which it developed. Its influence upon political and social thought and literary expression will also be examined. (Half course).

Humanities of Science N-451 (451). Descriptive Astronomy

History of contemporary astronomy with emphasis on cosmology and cosmogony; discussion of cosmological models; possibility of life in the universe. (Full course).

NOTE: – Students who have credit for Natural Science 231 or Humanities of Science 031 may not take this course for credit.

Humanities of Science N-461 (461). Topics in the History of Biological Sciences

This course will discuss biology, medicine and genetics; particular emphasis will be placed on Darwin's influence on biological thought and the impact of evolutionary theory on social thought and other disciplines; the evolution of cell theory and concepts of the nature of life; biological thought in ancient civilizations. (Full course).

Humanities of Science N-471 (471). Technology and Society

Prerequisite: Humanities of Science N-271. The course will discuss the revolutionary changes in the relationships of science, technology, industry and government in the 20th century; human problems in technological change; The Canadian scene – history of Canadian technology and case studies of its social impact; science, technology and public policy; ethical issues in technological change, e.g. automation, nuclear weapons, food and population, etc. (Half course).

Cognate Course

Archaeology N-212. Introduction to Archaeology II

HUMANITIES DIVISION

HUMANITIES

Rachael Wasserman, *Professor of Humanities*

Humanities N-340 (340). Special Topics in the Humanities

Subject 1971-72: The Nature of Woman.

Prerequisite: Second year standing or permission of the instructor. A critical analysis of some archetypes of woman as matter, intuitive, virgin or seductress, incomplete man, etc. . . Special attention will be given to Plato, Kierkegaard, Mill, Freud, Margaret Mead, and Simone de Beauvoir. (Half course).

ARCHAEOLOGY

Archaeology N-211 (211). Introduction to Archaeology I

An introduction to the archaeology of the ancient civilizations of the Near East and Mediterranean. Special consideration will be given to key discoveries in such areas as Mesopotamia, Egypt, Palestine, Crete, Greece, and Italy. Problems of field methodology will also be discussed. (Half course).

Archaeology N-212 (212). Introduction to Archaeology II

A survey of some of the more significant archaeological discoveries of prehistoric cultures in both the Old and New Worlds. The techniques of physical science in archaeology will be examined. Consideration will also be given to the development of Early Man. (Half course).

CANADIAN STUDIES

Canadian Studies N-411 (411). Seminar in Canadian Studies

Prerequisite: registration in third year of the major in Canadian Studies. This is a seminar course in Canadian Studies which involves participation by interested members of the staff as well as by students in the fourth year of the major in Canadian Studies. (Full course).

CLASSICS, MODERN LANGUAGES AND LINGUISTICS*

Paul Widdows, *Professor of Classics, and Chairman of the Department.*

CLASSICS

Paul Widdows, *Professor of Classics.*
Charles R. Barton, *Associate Professor of Classics and Linguistics.*

* The University reserves the right to place any student in the course for which he is best suited.

Classics N-221 (211). History of Greece and Rome

A political, cultural and social history of Greece and Rome from the Mycenaean Age to the Fall of the Roman Empire, with special emphasis on fifth century Athens and Rome of the Republic and Early Empire. No knowledge of Latin or Greek is required. (Full course).

NOTE: — Students who have credit for Classics 011 may not take this course for credit.

Classics N-443 (411). Advanced Study in Classics

Prerequisite: permission of the department. Students who wish to continue their study of Classics beyond the prescribed courses may be admitted to this course. The work of each student will be supervised by an appropriate member of the Classics department. (Full course).

NOTE: — With permission of the department, a student may take this course twice for credit provided that a different subject is dealt with the second time. He will register the second time under Classics N-444.

Classics N-444 (412). Advanced Study in Classics or Linguistics

Prerequisite: permission of the department. A student repeating Classics N-443 a second time for credit registers under Classics N-444. (Full course).

Cognate Course

Archaeology N-211. Introduction to Archaeology I

ANCIENT GREEK

Greek N-210 (211). Introductory Course in Greek

The purpose of this course is to enable a student, in one year, to gain an adequate knowledge of Greek grammar and syntax and to read simple passages of Greek. (Full course).

NOTE: — Students who have credit for Greek 011 may not take this course for credit.

Greek N-241 (212). Greek Language and Literature

The purpose of this course is to complete the study of Greek grammar and syntax begun in Greek N-210, and to enable students to begin reading Ancient Greek authors. (Full course).

NOTE: — Students who have credit for Greek 012 may not take this course for credit.

Greek N-441 (421). Greek Literature

This is essentially a reading course involving the study of certain of the great works of Ancient Greek literature. It is assumed that students taking this course have an adequate knowledge of Greek and a fair vocabulary. (Full course).

NOTE: — Students who have credit for Greek 021 may not take this course for credit.

Greek N-442 (422). Greek Literature (Advanced)

A further study of Ancient Greek literature (to follow Greek N-441). (Full course).

LATIN

Latin N-210 (201). Beginners' Latin

This course is designed for students who have had no previous Latin and is particularly recommended for those students who wish to be prepared for Latin N-240. The course offers instruction in Latin grammar, translation and prose composition. (Full course).

NOTE: — Students who have received credit toward their admission for high-school Latin or have credit for Latin 001 may not take this course for credit.

Latin N-240 (211). Latin Composition and Translation

This course consists of translation and literary interpretation of prescribed selections from the Latin classics in prose and poetry. In addition there is a review of Latin grammar and syntax and instruction in prose composition. (Full course).

NOTE: — Students who have credit for Latin 011 may not take this course for credit.

Latin N-241 (421). Latin Literature

This course continues the study of Latin literature begun in Latin N-240, concentrating on particular authors. Two authors will be read during the year, one of whom will normally be Virgil. (Full course).

NOTE: — Students who have credit for Latin 021 may not take this course for credit.

Latin N-441 (422). Latin Literature (Advanced)

A continuation of Latin N-241, concentrating on a particular period or the works of a particular author, e.g. Juvenal and Tacitus, or Lucretius. (Full course).

Latin N-442 (423). Latin Literature (Advanced)

A parallel course to Latin N-441, covering different authors, e.g. Latin Comedy, Latin Elegists or Horace. As Latin N-441 and Latin N-442 will not usually be given in the same year, Latin N-442 may be taken before Latin N-441. (Full course).

GERMAN

Annamaria Ketter, *Associate Professor of German.*
Ilse Ehmer, *Assistant Professor of German.*

German N-210 (211). Introductory Course in German

A beginners' course in the German language which is designed, in one year, to make the student conversant with the grammar, pronunciation and ordinary vocabulary of the language. Emphasis is placed upon learning to speak the language, as well as to read and write it. Lectures and laboratory. (Full course).

NOTE: — Students whose first language is German, or whose schooling has been conducted in German will not be admitted to this course.

Students who have credit for German 011, 015, 215 or N-215 may not take this course for credit.

German N-211 (411). Advanced German Language and Stylistics

Prerequisite: German N-241 or equivalent. This course is intended to give the student increased fluency and a firmer command of the language. The emphasis of the course is on stylistics and composition. The subject matter will be approached through a study of German civilization. (Full course).

NOTE: — Students who have credit for German 091 may not take this course for credit.

German N-215 (215). German for Reading Knowledge

This course will give the student sufficient background in the structure of the language to be able to read German with reasonable competence. Practice material will be both technical and non-technical. No previous knowledge of the language is required. (Full course).

NOTE: — Students whose first language is German, or whose schooling has been conducted in German, will not be admitted to this course.

Students who have credit for German 011, 015 or N-210 may not take this course for credit. This is a terminal course, and may not be used as a prerequisite for advanced courses in German.

German N-241 (212). German Language and Literature

Prerequisite: German N210 or equivalent. Advanced instruction in the language. Emphasis upon idiom and usage in conversation and composition. Representative readings from the works of German writers. (Full course).

NOTE: — Students whose first language is German, or whose schooling has been conducted in German, will not be admitted to this course.

Students who have credit for German 012 may not take this course for credit.

German N-451 (424). German Literature of the Sixteenth and Seventeenth Centuries

Prerequisite: German N-211 and N-241. A detailed study of representative writers of this period, such as Luther, Brant, Hans Sachs, Silesius, Grim-melshausen and others. Classes will be conducted in German. (Full course).

German N-452 (422). German Literature from 1750 to 1830

Prerequisite: German N-241 or equivalent. Study of the works of Lessing, Goethe, Schiller, Brentano and others. This course is conducted entirely in German. (Full course).

German N-453 (423). History of the German Drama

Prerequisite: German N-241 or equivalent. A study of German drama from its beginnings to modern times. Classes will be conducted in German. (Full course).

German N-454 (421). A Study of the Deutsche Novelle

Prerequisite: German N-241 or equivalent. Advanced composition and oral work. A study of the Deutsche Novelle from Goethe to Kafka. This course is conducted entirely in German. (Full course).

German N-455 (451). Reading Course in the Modern German Novel

Prerequisite: German N-454. A study of the German novel since 1900. There will be no class periods, and students will work under the direct supervision of the instructor. Regular assignments will be given, and written and oral examinations will be given at the end of the course. (Full course).

German N-456 (425). The 'Hörspiel'

Prerequisite: German N-211 and N-241. A study of one of the youngest art forms which was developed with the help of and for a new medium, the radio. Literary and technical aspects as well as the most representative writers, i.e. Eich, Dürrenmatt, Böll, Hildesheimer and others, will be discussed. Classes will be conducted in German. (Half course).

German N-457 (426). German Poetry from the Middle Ages to Modern Times

Prerequisite: German N-211 and N-241. A conspectus of German poetry through the centuries. Outstanding examples of representative poets will be studied in detail. Classes will be conducted in German. (Half course).

German N-458 (427). Study of an Individual German Author I

Prerequisite: German N-211 and N-241. This course will consist of the detailed study of a German author, e.g. Kafka, Rilke, Goethe. Classes will be conducted in German. (Half course).

German N-459 (428). Study of an Individual German Author II

Prerequisite: German N-211 and N-241. This course will consist of the detailed study of a German author, e.g. Brecht, Büchner, Lenz. Classes will be conducted in German. (Half course).

HEBREW

Joseph A. Macaluso, *Supervisor of Hebrew.*

Hebrew N-210 (211). Introductory Course in Hebrew

A beginners' course in Hebrew, spoken and written, with reading of classical and modern texts. Lectures and laboratory. (Full course).

NOTE: – Students whose first language is Hebrew, or whose schooling has been conducted in Hebrew, will not be admitted to this course.

Students who have credit for Hebrew 011 may not take this course for credit.

Hebrew N-215 (215). Biblical Hebrew

A course designed to enable the student to acquire the elements of Biblical Hebrew by means of reading practice and other exercises. This course is directed specifically towards Hebrew Biblical studies and is in no sense an equivalent of Hebrew N-210. (Full Course).

Hebrew N-241 (212). Intermediate Course in Hebrew

Prerequisite: Hebrew N-210, or two or three years of high-school Hebrew, or equivalent. Readings in the Bible and an introduction to modern Hebrew literature. This course will also complete the study of Hebrew grammar and syntax begun in Hebrew 211, with special emphasis on modern Hebrew usage. (Full course).

NOTE: – Students whose first language is Hebrew, or whose schooling has been conducted in Hebrew, will not be admitted to this course.

Students who have credit for Hebrew 012 may not take this course for credit.

Hebrew N-441 (422). From the Talmudic Period to the Haskalah

Prerequisite: Hebrew N-241 or equivalent. Hebrew literature from Talmudic times to the Englightenment. Classes will be conducted in Hebrew. (Full course).

Hebrew N-442 (424). Mediaeval Literature (The Golden Age)

Prerequisite: Hebrew N-441 or N-451 or its equivalent. A study of the literature of the Hebrew Golden Age, with emphasis on Maimonides, Judah Halevi, Ibn Ezra, Ibn Gabirol, Rashi and Gersonides. Classes will be conducted in Hebrew. (Full course).

Hebrew N-451 (423). Modern Literature.

Prerequisite: Hebrew N-241 or equivalent. A study of Hebrew literature of the 19th and 20th centuries. This course is conducted in Hebrew. (Full course).

NOTE: – Students who have credit for Hebrew 023 may not take this course for credit.

ITALIAN

Joseph A. Macaluso, *Assistant Professor of Spanish and Italian.*

Italian N-210 (211). Introductory Course in Italian

A beginners' course in the Italian language which is designed to acquaint the student in one year with the main grammatical principles and basic vocalulary. Practice is given in reading, writing and conversation, with particular emphasis on oral work. Lectures and laboratory. (Full course).

NOTE: – Students whose first language is Italian, or whose schooling has been conducted in Italian, will not be admitted to this course.

Students who have credit for Italian 011 may not take this course for credit.

Italian N-241 (212). Intermediate Italian

Prerequisite: Italian N-210, or two years of high school Italian or equivalent, or permission of the instructor. This course consists of a complete review of Italian grammar and a study of some of the more advanced aspect of usage. Through the reading of short stories, poetry and novels, the student is given the opportunity to acquaint himself with Italian letters and civilization. (Full course).

NOTE: – Students whose first language is Italian, or whose schooling has been conducted in Italian, will not be admitted to this course.

Students who have credit for Italian 012 may not take this course for credit.

Italian N-451 (421). Renaissance Literature

Prerequisite: Italian N-241 or equivalent. A study of Renaissance literature, with special emphasis on Ariosto, Machiavelli and Guicciardini. Classes will be conducted in Italian. (Full course).

Italian N-452 (422). Literature of the Twentieth Century

Prerequisite: Italian N-241 or equivalent. A course in Italian literature of the twentieth century, from the turn of the century to the present. All genres will be considered. Classes will be conducted in Italian. (Full course).

RUSSIAN

Angelika-Tatiana Sidorow, *Associate Professor of Russian.*

Russian N-210 (211). Introductory Course in Russian

A beginners' course in the Russian language which is designed in one year to acquaint the student with pronunciation, the main grammatical aspects and a basic vocabulary. Emphasis is placed on speaking, reading

and writing Russian. Lectures and laboratory. (Full course).

NOTE: — Students whose first language is Russian, or whose schooling has been conducted in Russian, will not be admitted to this course. Students who have credit for Russian 011, 015, 215 or N-215 may not take this course for credit.

Russian N-215 (215). Reading Course in Russian

This course will give the student sufficient grasp of the structure of the language and sufficient basic vocabulary to be able to read Russian with the aid of a dictionary. Both technical and non-technical material will be used. (Full course).

NOTE: — Students whose first language is Russian, or whose schooling has been conducted in Russian, will not be admitted to this course.

Students who have credit for Russian 011, 015 or N-210 may not take this course for credit. This is a terminal course, and may not be used as a prerequisite for advanced courses in Russian.

Russian N-231 (411). Advanced Russian Language and Stylistics

Prerequisite: Russian N-241 or permission of the instructor. This course is intended to give increased fluency and a firmer command of the language. The emphasis of the course is on stylistics and composition. Through additional reading the student is given the opportunity to acquaint himself with the various aspects of Russian civilization. Selected texts will be discussed and analysed in Russian. (Full course).

NOTE: — Students who have credit for Russian 091 may not take this course for credit.

Russian N-241 (212). Intermediate Russian

Prerequisite: Russian N-210 or equivalent. This course consists of a complete review of Russian grammar, composition, reading and conversation. Through reading of short stories and additional material, the student is given the opportunity of acquainting himself with Russian culture and literature. (Full course).

NOTE: — Students whose first language is Russian, or whose schooling has been conducted in Russian, will not be admitted to this course.

Students who have credit for Russian 012 may not take this course for credit.

Russian N-451 (421). Introduction to 19th Century Russian Literature through the Short Story

Prerequisite: Russian N-241 or equivalent. The short story will be used both as a subject for literary study and as a reflection of the history and social preoccupations of the period. Opportunity will be provided for discussion and some attention will be paid to composition. This course is conducted in Russian. (Full course).

Russian N-452 (422). Soviet Literature

Prerequisite: Russian N-241 or equivalent. A general survey of Soviet prose, drama, and poetry from 1917 to the present day. The aim of the course is to familiarize the student not only with the literature itself but also with its origins and development. Opportunity will be provided for discussions and some time will be devoted to advanced composition. This course is conducted in Russian. (Full course).

Russian N-453 (423). Russian Drama

Prerequisite: Russian N-241, or permission of the instructor. The course traces the development of Russian Drama from the end of the 18th century to the present day. The following will be discussed: D. Fonvisin, A. Gribojedov, A. Pushkin, M. Lermontov, N. Gogol, A. Ostrovski, A. Chekhov. A. Tolstoi, M. Gorki, A. Afinogenov, L. Leonov. This course is conducted in Russian. (Full course).

SPANISH

John D. Grayson, *Associate Professor of Spanish and Linguistics.*
Joseph A. Macaluso, *Assistant Professor of Spanish and Italian.*

Spanish N-210 (211). Introductory Course in Spanish

A beginners' course in the Spanish language, which is designed in one year to acquaint the student with the main grammatical principles and basic vocabulary. Practice is given in reading, writing and conversation, particular emphasis being placed on oral work. In the second term, classes are conducted as far as is possible in Spanish. Lectures and laboratory. (Full course).

NOTE: — Students whose first language is Spanish, or whose schooling has been conducted in Spanish, will not be admitted to this course.

Students who have credit for Spanish 011 may not take this course for credit.

Spanish N-221 (429). Spanish Civilization

Prerequisite: Spanish N-241 or equivalent. This course is designed to acquaint the student with Spain's intellectual and cultural history as reflected in her writers. Although it is primarily concerned with ideas and aesthetics, attention will also be given to the development of language, dialectology, customs and folklore. This course is conducted in Spanish. (Full course).

NOTE: — Students who have credit for Spanish 029 may not take this course for credit.

Spanish N-241 (212). Spanish Language and Literature

Prerequisite: Spanish N-210, or two or three years of high-school Spanish, or equivalent. Included in this course are a complete review of Spanish grammar and a study of some of the more advanced aspects

of usage. Through the reading of short stories and novels, the student is given the opportunity to acquaint himself with Spanish and Spanish-American letters and civilization. Classes will be conducted in Spanish. (Full course).

NOTE: — Students whose first language is Spanish, or whose schooling has been conducted in Spanish, will not be admitted to this course.

Students who have credit for Spanish 012 may not take this course for credit.

Spanish N-411 (411). Advanced Spanish Composition and Stylistics

Prerequisite: Spanish N-241. A course to treat in detail the finer points of Spanish stylistics. Special attention will be given to free composition and semantics. (Full course).

Spanish N-451 (451). The Middle Ages

Prerequisites: Spanish N-241 and any other '400' level Spanish course. A study of the characteristics of Old Spanish, with readings in the literature of the Middle Ages. Ample practice is given in oral and written expression. Classes will be conducted in Spanish. (Full course).

NOTE: — Students who have credit for Spanish 422 before 1969-70 may not take this course for credit.

Spanish N-452 (426, 427). El Siglo de Oro

Prerequisite: Spanish N-241; Spanish N-221 or equivalent. This course is designed to introduce to the student the masterpieces of Spain's Golden Age. Particular emphasis is given to Cervantes and the Quijote. This course is conducted in Spanish. (Full course).

Spanish N-453 (453). Nineteenth Century Spanish Literature

Prerequisite: Spanish N-241 or equivalent. A study of the work of representative writers of the period, with ample practice offered in oral and written expression. Classes will be conducted in Spanish. (Full course).

NOTE: — Students who have credit for Spanish 422 before 1969-70 may not take this course for credit.

Spanish N-454 (423). Twentieth Century Spanish Literature

Prerequisite: Spanish N-241. A study of the literature of Spain, starting with the Generation of '98 and going up to the present day. Ample practice is given in oral expression and advanced composition. Classes will be conducted in Spanish. (Full course).

Spanish N-455 (421). The Literature of Spanish America

Prerequisite: Spanish N-241 or equivalent. The aim of this course is to familiarize the student with the history, political thought and civilization of Spanish America as expressed through her literature. Ample

practice is given in oral expression and advanced composition. Classes will be conducted in Spanish. (Full course).

PORTUGUESE

Portuguese N-441 (411). Portuguese Language and Literature

Prerequisite: Spanish N-241 or equivalent and any other '400' level Spanish course. A course designed for advanced Spanish students. Readings in Portuguese begin as early as the fifth week of class. (Full course).

NOTE: — Students whose first language is Portuguese or who have previously studied Portuguese formally will not be admitted to this course.

ARABIC

Arabic N-411 (411). Introduction to Arabic.

This course is designed to give in one year the rudiments of the Arabic literary language. Special attention will be given to Hispano-Arabic writers and their works. (Full course).

NOTE: — Students whose first language is Arabic or who have previously studied Arabic formally will not be admitted to this course.

LINGUISTICS

Charles R. Barton, *Associate Professor of Classics and Linguistics*.
John D. Grayson, *Associate Professor of Spanish and Linguistics*.

Linguistics N-221 (211). Introduction to Linguistics

Prerequisite: Formal study of a language other than the student's mother tongue. This course will enable the student to become familiar with the basic elements which underlie all languages and will acquaint him with a number of varied linguistic patterns with emphasis on the analysis of languages having structural features which differ widely from those ordinarily encountered. (Full course).

NOTE: — Students who have credit for Linguistics 011 may not take this course for credit.

Linguistics N-421 (423). Non-Indo-European Structures

Prerequisite: Linguistics N-221 or permission of the instructor.

This course is intended to acquaint the student in depth with the structures of several languages differing markedly in their nature from Indo-European. Possible areas of study might be Eskimo, Finnish, Japanese, Swahili, Turkish, some Amerindian or Malayo-Polynesian language, etc. As a general rule, only four languages are investigated in a particular year. (Full course).

Linguistics N-431 (421). Comparative Indo-European Linguistics

Prerequisite:　Linguistics N-221 or permission of the instructor. Through a comparative study of the phonology and morphology of the various branches of the Indo-European language family (Indo-Iranian, Hellenic, Italic, Germanic, Slavonic, Baltic, etc), this course will familiarize the student with the techniques used in linguistic reconstruction. Emphasis will be given to the development and differentiation of languages through time. (Full course).

Linguistics N-441 (422). Advanced Linguistic Theory

Prerequisite: Linguistics N-221. A study of current trends in linguistic theory with particular emphasis on transformational-generative and stratificational theory. The influence of de Saussure on present-day theoretical developments will be considered as well as that of the American structuralists. Tagmemic theory and case grammar will also be discussed. (Full course).

Linguistics N-451 (451). Advanced Study in Linguistics

Prerequisite: Permission of the department. Students who wish to continue their study of Linguistics beyond the prescribed courses may be admitted to this course. The work of each student will be supervised by an appropriate member of the Linguistics department. (Full course).

NOTE: – With permission of the department, a student may take this course twice for credit provided that a different subject is dealt with the second time. He will register the second time under Linguistics N452.

Linguistics N-452 (452). Advanced Study in Linguistics

Prerequisite: permission of the department. A student repeating Linguistics N-451 a second time for credit registers under Linguistics N-452. (Full course).

ENGLISH

Sidney S. Lamb, *Professor of English and Chairman of the Department.*
Douglass Burns Clarke, *Professor of English and Fine Arts.*
Neil Compton, *Professor of English.*
Wynne Francis, *Professor of English.*
Matthew J.C. Hodgart, *Professor of English.*
Rachel Wasserman, *Professor of English and Humanities.*
Henry E. Beissel, *Associate Professor of English.*
Roselyn Belkin, *Associate Professor of English.*
Michael Brian, *Associate Professor of English.*
Audrey Brune, *Associate Professor of English.*
Mervin Butovsky, *Associate Professor of English.*
Howard Fink, *Associate Professor of English.*
Malcolm B. Foster, *Associate Professor of English.*
John B. Friedman, *Associate Professor of English.*
Michael M. Gnarowski, *Associate Professor of English.*
Stanton de Voren Hoffman, *Associate Professor of English.*

L. Elizabeth MacLean, *Associate Professor of English.*
David B. McKeen, *Associate Professor of English.*
Leonard Mendelsohn, *Associate Professor of English.*
G. David Sheps, *Associate Professor of English.*
Richard J. Sommer, *Associate Professor of English.*
Anne M. Stokes, *Associate Professor of English.*
Rytsa Tobias, *Associate Professor of English.*
Gerald M. Auchinachie, *Assistant Professor of English.*
Roger A. Bird, *Assistant Professor of English.*
Clark L. Blaise, *Assistant Professor of English.*
George Bowering, *Assistant Professor of English.*
David Ketterer, *Assistant Professor of English.*
Edward Pechter, *Assistant Professor of English.*
Lewis J. Poteet, *Assistant Professor of English.*
Abraham Ram, *Assistant Professor of English.*
Yvonne Klein, *Visiting Assistant Professor of English.*
Coleman J. Newman, *Visiting Assistant Professor of English.*
Margaret I. Broad, *Sessional Lecturer in English.*

English N-200 (200). English Language

A non-credit course for students whose first language is other than English, designed to raise the student's level of expression to a standard which will enable him to work efficiently at the University. The student will remain in English N-200 until, in the opinion of the instructor, he is able to express himself clearly and coherently. Once the student has passed English N-200, he will not have to take English N-201 or English N-211 although he may later elect to take one of these courses for credit. (Evening only)

NOTE: – See explanation on page 47.

English N-201 (201). English Language and Composition

This course is designed for students who have completed secondary school or the equivalent in a language other than English and for whom, therefore, English is a secondary tongue. (Full course). (Evening only)

NOTE: – Students who have credit for English N-211 may not take this course for credit.

NOTE: – See explanation on page 47.

English N-211 (211). College Composition

This course encourages the development, through practice in the skills of writing, of an effective prose style, to enable the student to work effectively at the college level and beyond. (Full course) (Evening only).

English N-215 (215). Introduction to Speech

An introduction to the theory and practice of public speech. (Full course).

NOTE: - Students who have credit for English 015 may not take this course for credit.

English N-217 (217). Western Literary Backgrounds

A study of the traditions that underlie the modern language literatures through readings from, for example, The Bible, Classical Mythology (epic and drama), Aristotle's Poetics, Platonic dialogues, Dante, etc. (Half course).

NOTE: - Students who have credit for English 017 may not take this course for credit.

English N-219 (219). Creative Writing (Prose)

A study of the creative and technical problems of the short story; analysis and criticism of the student's own work. (Full course).

English N-221 (221). Introduction to English Literature

The first-year course studies the development of English literature from Chaucer to the present. Students are expected to attend regular conferences in addition to the lectures. (Full course) (Evening only).

English N-222 (222). Literature and the Modern World

Intended primarily for students in Science, Commerce or Engineering, this introductory course is devoted mainly, although not exclusively, to a study of the literature of this century. Students are expected to attend regular conferences in addition to the lectures. (Full course) (Evening only).

NOTE: - This course is not an acceptable prerequisite for most advanced English courses.

English N-240 (240). World Literature in Translation

A survey of writers in the western tradition who have written in languages other than English, from Homer to Albert Camus. (Full course).

NOTE: – Students who have credit for English 040, 241 or 242 or 243 may not take this course for credit.

English N-244 (244). Canadian Literature

This course provides for the study of Canadian prose and poetry written in or translated into English. Particular emphasis is placed upon contemporary writers. (For a similar and complementary course in French, see French N-331.) (Full course).

NOTE: - Students who have credit for English 044 may not take this course for credit.

English N-253 (253). Shakespeare

A study of Shakespeare's achievements as dramatist and poet, and the relationship of his work to the social and literary traditions of his day. Shakespeare's work as a whole will be surveyed in some detail: close attention will be paid to some five or six plays and to the Sonnets. (Full course).

NOTE: - Students who have credit for English 053 may not take this course for credit.

English N-261 (261). Introduction to Poetry

A study of poetry and its forms with emphasis upon the art of close reading. (Half course).

NOTE: - Students who have credit for English 061 may not take this course for credit.

English N-265 (265). Introduction to European Drama

A study of the European dramatic tradition from the beginning of Greek tragedy to the end of the nineteenth century. (Full course).

NOTE: - Students who have credit for English 065 may not take this course for credit.

English N-266 (266). The Short Story

A study of the forms and techniques of short fiction. (Half course).

NOTE: Students who have credit for English 066 may not take this course for credit.

English N-277 (277). Popular Culture and the Mass Media

A historical, theoretical and critical introduction to such characteristic modern media as newspapers, best-selling fiction, magazines, movies, popular music, radio and television (Full course).

NOTE: - Students who have credit for English 077 may not take this course for credit.

English N-280. History and Structure of the English Language

The course deals with the linguistic and historical development of the English language. The influence of language changes upon the literature will also be considered. (Full course).

English N-411 (411). Advanced Composition

English N-411 is offered to those students who wish to continue in a writing course in order to gain greater effectiveness in composition for general purposes. (Full course).

NOTE: – Students who have credit for English 212 or English 091 may not take this course for credit.

English N-418 (418). Creative Writing (Poetry).

Prerequisite: Second year standing. This course offers advice and a critical reading of the work of advanced students with a special interest and ability in written expression. (Full course).

NOTE: - This course is open to undergraduates only.

English N-419 (419). Advanced Creative Writing (Prose)

Prerequisite: Second year standing. This course offers advice and a critical reading of the work of advanced students with a special interest and ability in written expression. (Full course).

English N-431 (431). Literature of the English Renaissance

A study of English literature from Wyatt to Marvell, excluding drama. (Full course).

English N-434 (434). English Literature of the Restoration and 18th Century

A study of English literature from 1660 to 1780. (Full course).

English N-435 (435). English Literature of the Romantic Period

A study of prose and poetry from Blake to Keats. (Full course).

English N-436 (436). Victorian Literature

A study of the works of major writers in England from 1830 to 1900. (Full course).

English N-437 (437). Modern British and American Literature

A study of literature in English since 1900. (Full course).

English N-444 (444). Canadian Literature (Advanced)

Prerequisite: English N-244. A study at a more advanced level than is possible in English N-244 of a limited number of major Canadian writers. (Full Course).

English N-445 (445). American Literature

A study of American prose and poetry from colonial times to the twentieth century. (Full course).

English N-446 (446). Modern European Literature

A study of the work (in translation) of major European writers from 1880 to the present. (Full course)

English N-447 (447). American Literature (Advanced)

Prerequisite: English N-445. A limited aspect of American literature will be studied intensively. (Half course).

English 448 (448). Canadian Fiction

Prerequisite: English N-244. A study of selected writers in the modern Canadian short story and novel. (Half course).

English N-453 (453). Shakespeare (Advanced)

Prerequisite: English N-253. An advanced study of a limited number of plays. (Half course).

English N-454 (454). Chaucer and his Contemporaries

A study of the work of Chaucer and a few of his major contemporaries. (Full course).

English N-455 (455). Spenser and Milton

A study of the works of Edmund Spenser and John Milton. (Full course).

English N-461 (461). Modern Poetry

Prerequisite: Second year standing. A study of the works of major poets in the English language in the twentieth century. (Half course).

English N-462 (462). The Modern Drama

Prerequisite: Second year standing. A study of drama since Ibsen in Europe, Britain and America. (Half course).

NOTE: - Students who have credit for English 262 may not take this course for credit.

English N-463 (463). The English Novel

A study of the origin and development of the English novel to the end of the nineteenth century with special emphasis on readings from Defoe to Henry James. (Full course).

English N-464 (464). Modern Fiction

Prerequisite: Second year standing. A study of a limited aspect of modern prose fiction. (Half course).

English N-467 (467). Literary Criticism

Prerequisite: Second year standing. This course offers both a history of literary criticism from antiquity to the present and studies in the practice of the best contemporary critics. (Full course).

English N-468 (468). English Renaissance Drama

A study of the English drama in the 16th and 17th centuries. (Full course).

English N-471 (471). Honours Essay

Prerequisite: open to third-year Honours students or to others by permission of the department. Under the supervision of a faculty member, students will write a scholarly critical essay of some 7,500 to 10,000 words. (Half course).

English N-474 (474). Bibliography and Methodology

Prerequisite: Second year standing. A course designed to acquaint students with research tools and techniques. (Half course).

English N-475 (475). The Religious and Aesthetic Experience in Literature

Prerequisite: Second year standing. A seminar course which explores the relationship between literature and religious experience. (Full course).

English N-481 (481). Anglo-Saxon

A study of language and literature in the Anglo-Saxon era. (Full course).

English N-483 (483). Middle English

A study of the language and literature of England from the twelfth to the fifteenth century (excluding Chaucer). (Full course)

English N-492 (492). Advanced Seminar in a Special Subject

Prerequisite: Second year standing. This course is designed to provide an opportunity for cooperative study and discussion of literature at a relatively advanced level. It is taught, from year to year, by different members of the English department, and the subject changes to accord with the special interests of each instructor. (Full course).

NOTE: - With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time under English N-493.

English N-493 (473). Advanced Seminar in a Special Subject

Prerequisite: Second year standing. A student repeating English N-492 a second time registers for credit under English N-493 (Full course).

English N-496 (496). Advanced Seminar in a Special Subject

Prerequisite: Second year standing. This course in designed to provide an opportunity for cooperative study and discussion of literature at a relatively advanced level. It is taught, from year to year, by different members of the English Department, and the subject changes to accord with the special interests of each instructor. (Half course).

NOTE: - With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time under English N497.

English N-497 (497). Advanced Seminar in a Special Subject

Prerequisite: Second year standing. A student repeating English N-496 for a second time registers for credit under English N-497. (Half course).

Cognate Course

Linguistics N-211. Introduction to Linguistics.

TEACHING OF ENGLISH AS A SECOND LANGUAGE (TESL)

NOTE: - In the past the following courses have been offered during the Special Day Summer Session only, but henceforth may also be offered during the regular session. Students will register for all courses as an integrated programme. For further details, contact Associate Professor Anne Stokes.

Applied Linguistics N-421 (221). Teaching Methods

A course on the practical application of various teaching methods with emphasis on audio-visual techniques. Teachers will be shown how to prepare lesson plans and how to use their classroom texts to maximum advantage. (Half course).

Applied Linguistics N-431 (231). Grammatical Theory

A study of the underlying principles of modern English grammar and their relation to second language teaching. A contrastive approach to morphological and syntactic structures will be used, and the uses of transformational grammar as a means of determining the deep structure of English will be explored. (Half course).

Applied Linguistics N-441 (241). Comparative Phonetics

A study of the phonetic and phonemic features of English, and the methodology of corrective phonetic practice for the non-native speaker. A comparison of the phonological systems of English and French will be emphasized, but points of conflict between English and certain other languages, and methods of reducing interference, will also be discussed. (Half course).

Applied Linguistics N-451 (251). Growth and Development of the English Language

A study of the development of English phonology, morphology, and vocabulary over the centuries. This is an enrichment course which provides insight into the process of language change which is still going on. (Half course).

FINE ARTS

Edwy F. Cooke, *Professor of Fine Arts, and Chairman of the Department.*
Douglass Burns Clarke, *Professor of English and Fine Arts.*
Alfred Pinsky, *Professor of Fine Arts.*
Leah Sherman, *Professor of Fine Arts.*
Yves J. Gaucher, *Associate Professor of Fine Arts.*
J. Russell Harper, *Associate Professor of Fine Arts.*
Stanley Horner, *Associate Professor of Fine Arts.*
Judith Kelly, *Associate Professor of Fine Arts.*
F.J. Miller, *Associate Professor of Fine Arts.*
Frank Mulvey, *Associate Professor of Fine Arts.*
John Ivor Smith, *Associate Professor of Fine Arts.*
Norma Springford, *Associate Professor of Fine Arts.*
Donald Andrus, *Assistant Professor of Fine Arts.*
Edward G. Bakony, *Assistant Professor of Fine Arts.*
Philip Cohen, *Assistant Professor of Fine Arts.*
Gary W. Coward, *Assistant Professor of Fine Arts.*
Christopher Gabriel-Lacki, *Assistant Professor of Fine Arts.*

Jean Goguen, *Assistant Professor of Fine Arts.*
Ellen James, *Assistant Professor of Fine Arts.*
Dennis Jones, *Assistant Professor of Fine Arts.*
G. Molinari, *Visiting Assistant Professor of Fine Arts.*
Walter K. Sloan, *Assistant Professor of Fine Arts.*
Barry Wainwright, *Assistant Professor of Fine Arts.*
Kenneth Adams, *Lecturer in Fine Arts.*
H.W. Jones, *Lecturer in Fine Arts.*
Orson Wheeler, *Special Lecturer in Fine Arts.*

Studio Course Prerequisites in Visual Arts

The prerequisite for all other studio courses in Visual Arts is: CEGEP Studio art, or Art 001 and 002 or the equivalent. A student without this background must take Art N-331* and N-360* as prerequisite to other studio courses in Visual Arts.

A student intending to pursue a major or joint major involving studio Visual Arts courses, but who does not have the CEGEP prerequisites, may, in exceptional cases be admitted to the programme, but must take Art N-331* and Art N-360* in the first year.

Art N-210 (211). Image and Idea, Drawing

An exploration of drawing as space, the figure, visual skills, graphic image. (Half course)

Art N-211 (211). Image and Idea, Painting

An exploration of painting, colour, style, image, visual skills, and the basic technology of painting materials. (Half course).

Art N-232 (232). Introduction to Architecture and Sculpture

To enable the student to understand and appreciate great works in architecture and sculpture, and to develop a discriminative understanding of three-dimensional form in design and in his architectural environment, the main types, styles, and techniques of these arts are explained and illustrated. To understand their significance, the student is encouraged to become familiar with great examples of these arts through pictorial reproductions, slides, models, museum visits, and field trips. (Full course).

NOTE: - Students who have credit for Art 032 may not take this course for credit.

Art N-240 (240). Key Monuments in Art History

A study of selected works which represent outstanding and significant achievements in the visual arts. This course will provide an introduction to the history of art, and a desirable foundation for students wishing to pursue more specialized studies in this field. (Full course).

NOTE: — Students who have had the CEGEP equivalent of Art N-240 need not take it as part of their major programme but may elect to take it with the permission of the Department.

Art N-248 (248). The History of Interior Design

A survey of the history of interior design in western civilization, outlining briefly how particular styles developed out of the social customs, mores, and general spirit of the times. Special emphasis on the Renaissance, eighteenth century, and contemporary styles (Full course).

NOTE: - Students who have credit for Art 048 may not take this course for credit.

Art N-249 (249). Canadian Sculpture and Architecture

A study of the more important developments of Canadian architecture and sculpture from indigenous forms to contemporary work. (Full course).

NOTE: - Students who have credit for Art 049 may not take this course for credit.

Art N-251 (251). Art For Classroom Use

A practical and theoretical course of particular interest to teachers. The philosophy of art education, the potentialities of materials and techniques are considered in relation to actual classroom situations. Students are introduced to various creative art media, including painting, collage, construction, printing, and modelling, and are encouraged to see their possibilities for children of different ages. The importance and nature of art in child development is stressed with the aid of films, slides, and selected readings. (Full course).

Art N-311 (411, 412, 414). Painting

Prerequisite: Art N-211. A course in which various media, and forms of expressions will be explored at the more advanced level. (Half course).

NOTE: - A student continuing Art N-311 registers for credit under Art N-312, N-411, N-412, N-413, N-414 consecutively.

Art N-312 (see Art N-311)

Art N-321 (221, 421, 422). Sculpture

First works are generally in traditional materials (clay, plaster, wood, concrete, steel, etc.) but in fact, any materials may be used. (Half course)

NOTE: — A student continuing Art N-321 registers for credit under Art N-322, N-421, N-422, N-423, N-424 consecutively.

Art N-322 (see Art N-321)

Art N-331 (331). Workshop in Art

An exploration of the structures of art involving such media as painting, drawing, design, film, photography, sound, etc. Students are expected to

initiate certain projects of their own and work on a tutorial basis. (Half course).

Art N-338 (497). Photography

The use of photography and light as a source of image, ideas. (Half course).

NOTE: - With the permission of the Department a student may take this course twice for credit. He will register the second time for credit under Art N-438.

Art N-341 (241). Art in the Ancient World

This course will consider the emergence of art in the ancient world, giving particular attention to its development in Egypt, Greece, Rome and the Near East. (Full course).

Art N-342 (242). The History of Renaissance Art

A survey of painting, sculpture and architecture in Italy and Northern Europe during the fifteenth and sixteenth centuries. (Full course).

Art N-343 (243). The History of Nineteenth Century Art

Prerequisite: Art N-240. Starting with the French Revolution and Neo-Classicism, this course will examine Romanticism, Realism, Naturalism, Impressionism, Post-Impressionism and other nineteenth century movements leading up to the emergence of Fauvism in the twentieth century. (Full course).

Art N-345 (245). Art in the Twentieth Century

Prerequisite: Art N-240. Commencing with Cubism, this course will examine the main movements and trends which have occured in western art during this century. Special emphasis will be given to the contemporary scene. (Full course).

Art N-360 (360). Seminar in Art

An interdisciplinary seminar in art and its context. (Half course).

Art N-370 (490). Design

The dynamics and structures of two and three-dimensional design. (Half course)

NOTE: - A student continuing Art N-370 registers for credit under Art N-470 the second time.

Art N-371 (491, 492, 493, 494, 495). Graphic Design

Prerequisite: Art N-370.

The application of visual ideas to communication processes. (Half course).

NOTE: - A student continuing Art N-371 registers for credit under Art N-372, N-471, N-472, N-473, N-474, N-475 consecutively.

Art N-372 (see Art N-371)

Art N-381 (281, 481, 482). Graphics

Prerequisite: Art N-210. An introduction to the graphic media; the history of the graphic arts and their relationships with other art forms. The student will investigate and experiment with various approaches, both traditional and contemporary. (Half course).

NOTE: - A student continuing Art N-381 registers for credit under Art N-382, N-481, N-482, N-483, N-484 consecutively.

Art N-382 (see Art N-381)

Art N-400 (410). Drawing

Prerequisite: Art N-210. A drawing course in which various media and forms of expression will be explored at the more advanced level. Lectures and studio periods. (Half course).

NOTE: - A student continuing Art N-400 registers for credit under Art N-401 the second time.

Art N-401 (see Art N-400)
Art N-411 (see Art N-311)
Art N-412 (see Art N-311)
Art N-413 (see Art N-311)
Art N-414 (see Art N-311)
Art N-421 (see Art N-321)
Art N-422 (see Art N-321)
Art N-423 (see Art N-321)
Art N-424 (see Art N-321)

Art N-430 (452). Multi-Media

Prerequisite: Three credits of studio art, or permission of instructor.

The technology of video, film, slides, sound, etc. as potential media for the artist and art educator. (Half course).

Art N-432 (452). Crafts

Prerequisite: Four credits of studio art.

The basis of crafts such as ceramics, textiles, batik, etc. as potential media for the artist and art educator. (Half course).

Art N-433 (433). Materials and Methods of the Artist

Prerequisite: Permission of the Department. Through a series of special projects this course will familiarize the student with some of the various materials, techniques and other aspects of the artist's craft. Since special emphasis will be given to historical techniques, this course is particularly recommended for all students in art history. Lectures and studio periods. (Half course).

NOTE: - A student continuing Art N-433 registers for credit under Art N-434 the second time.

Art N-434 (see Art N-433)

Art N-435 (496). Colour

Prerequisite: four credits in studio art. Advanced theory and research in colour. (Half course).

NOTE: - A student continuing Art N-435 registers for credit under Art N-436 the second time.

Art N-436 (see Art N-435)

Art N-438 (497). Photography

Prerequisite: Permission of the Department. A student repeating Art N-338 for a second time registers under Art N-438 for credit. (Half course)

Art N-441 (441). The History of Medieval Art

Prerequisite: Art N-240. This course will survey the growth of European art from early Christian times through the fourteenth century. (Full course).

Art N-443 (443). History of Baroque and Rococo Art

Prerequisite: Art N-240. Commencing with Mannerism, this course will continue on to investigate the major personalities and achievements in Dutch, Flemish, English, French, Italian and Spanish art in the seventeenth and eighteenth centuries. (Full course).

Art N-444 (444). The Arts in Canada

Prerequisite: Art N-240. A history of the arts in Canada from the 17th century to the present day. Where relevant, special attention will be given to those European and American influences which have shaped its growth. (Full course).

Art N-445 (445). American Art and the European Background

Prerequisite: Art N-240. A survey of American Art from earliest colonial times into the 20th century, viewed against the background of those European developments which have significantly affected it. (Full course).

Art N-446 (446). History of Modern Architecture

An examination of the major building styles of the nineteenth and twentieth centuries, with emphasis on the contributions of individual architects from Louis Sullivan to Mies van der Rohe. (Full course).

Art N-447 (447). Special Studies in the History of Art

Prerequisites: two courses in art history. Students in this course will examine and discuss selected aspects of art history. The areas

chosen for consideration will vary from year to year according to the instructor's field of specialization. All students will be required to undertake research projects, and to submit papers based on their investigations. (Full course).

Art N-450 (450). Seminar in Art Education

Prerequisite: Third year standing or permission of the Department.

The development of a philosophy of art education on the basis of studio experiences, readings, the observation of and participation in teaching situations, etc. (Full course).

Art N-460 (431). Analysis of Great Works of Art

Prerequisite: Permission of the Department. An advanced course in art principles. Through the formal analysis of selected masterpieces of painting and sculpture the student is led to a fuller comprehension of the nature of formal order in the arts. (Full course).

Art N-461 (461). Introduction to Aesthetics

This course provides an introduction to the philosophy and psychology of aesthetics. Topics will include the nature of beauty and art, aesthetic experience, symbolic thinking and expression, art as symbolic activity, art as communication, and the principles of formal organization underlying all the arts: music, poetry, drama, sculpture, and painting. (Full course).

Art N-470 (see Art N-370)
Art N-471 (see Art N-371)
Art N-472 (see Art N-371)
Art N-473 (see Art N-371)
Art N-474 (see Art N-371)
Art N-475 (see Art N-371)
Art N-481 (see Art N-381)
Art N-482 (see Art N-381)
Art N-483 (see Art N-381)
Art N-484 (see Art N-381)

Art N-510 (510). Studio Research

Prerequisite: a Bachelor of Fine Arts with a major in Art Education, or equivalent. A studio course in which students choose their own area (s) of work. (Full course).

Art N-530 (530). Inter-Disciplinary Seminar in Art and Quebec Education

Prerequisite: a Bachelor of Fine Arts with a major in Art Education, or equivalent. Students identify areas of concern as a result of their art teaching experience in Art N-550. These concerns are explored with a team of experts from different backgrounds, both within the university and from the community. The course includes a minimum of 15 hours of lectures in Quebec School Law. (Full course).

Art N-550 (550). Internship in Art Education

Prerequisite: a Bachelor of Fine Arts with a major in Art Education, or equivalent. Teaching, observation and practice - three days a week in a school situation. (Full course).

MOVING PICTURES

NOTE: — Students are required to bear the cost of film and other materials.

Moving Pictures N-211 (Cinema 257). History of the Film

A study of the history of the film from its beginning to the present. The forms, functions, aesthetics and technology of the film will be dealt with through the examination of individual works. (Full course).

NOTE: - Students who have credit for Cinema 057 may not take this course for credit.

Moving Pictures N-212 (Cinema 258). Film Aesthetics

A study of the aesthetics of the film. Symbolism, realism, expressionism, abstraction and other forms of film art will be studied in relation to the great schools and theoreticians in the field. (Full course).

NOTE: - Students who have credit for Cinema 058 may not take this course for credit.

Moving Pictures N-311 (Cinema 211). The Art of Film-making I

Prerequisite: Moving Pictures N-211 or N-212 previously or concurrently and permission of the instructor. An introductory course in the theory and practice of film-making. This course will stress the individual student's creative efforts. Lectures and laboratory periods. (Full course).

Moving Pictures N-312 (Cinema 212). Animation Cinema

Prerequisite: Moving Pictures N-311 and permission of the instructor. An introduction to the theory and practice of animation. Lectures and laboratory periods. (Full course).

Moving Pictures N-411 (Cinema 411). The Art of Film-making II

Prerequisite: Moving Pictures N-311 and permission of the instructor. An intermediate course in the theory and practice of film-making. The course will stress the individual student's creative and experimental efforts. Lectures and laboratory periods. (Full course)

Moving Pictures N-412 (Cinema 412). The Art of Film-making III

Prerequisite: Moving Pictures N-311 and N-212 and permission of the instructor. The completion of an advanced film project including its writing, design, production and editing. (Full course).

NOTE: - Not offered in 1971-72.

Moving Pictures N-431 (Cinema 431). Sound

Prerequisite: Moving Pictures N-311 and permission of the instructor. Creative and experimental exercises in the use of sound with moving images. (Full course).

NOTE: - Not offered in 1971-72.

MUSIC

Music N-235 (234). Materials, Structure and Media

Prerequisite: CEGEP Music programme or equivalent or permission of the section head. An exploration of the musical environment through aural perception, composition and analysis. The emphasis is on direct experience with contemporary as well as traditional sound sources and materials. Pacing throughout is historical, cross-cultural and multi-disciplinary, encouraging the student to discover universal principles in diverse styles, textures and sonorities. Audio-visual aids include recordings, slides and programmed texts. Lecture and lab. (Full course).

Music N-245 (245). The History of Music

A survey of musical styles in the context of cultural history from antiquity to the present day. Areas covered range from primitive, nonwestern, folk and ancient Greek music through the mainstream of the Western tradition to developments in atonal, serial, Jazz, electronic and chance music. (Full course).

NOTE: — Students who have credit for Fine Arts 245 or Music 045 may not take this course for credit.

Music N-321 (423). Aural Perception

A self-paced program in dictation, sight-singing and score reading. The program aims at cultivating a comprehensive musical sensibility through the use of electronic, mechanical and natural as well as traditional sound sources and materials. (Half course).

NOTE: - With permission of the Department, a student may take this course twice for credit. He will register the second time for credit under Music N-322.

Music N-322 (424). Aural Perception

Prerequisite: Permission of the Department. A student repeating Music N-321 for a second time registers for credit under Music N-322 (Half course).

Music N-335 (271, 431, 461). Composition

Prerequisite: Music N-235 or equivalent or approval of the section head. A self-paced programme that aims at developing skill in composition

through a variety of forms, styles, textures and media. Lecture and lab. (Full course).

NOTE: - With permission of the Department, a student may take this course twice for credit. He will register the second time for credit under Music N-435.

Music N-341 (441). Seminar in History and Literature of Music

Prerequisite: Music N-235 or N-245, or approval of the section head. A comprehensive study of a selected period or area. (Half course).

NOTE: - With permission of the Department a student may take this course twice for credit. He will register the second time for credit under Music N-342.

Music N-342 (441). Seminar in History and Literature of Music.

Prerequisite: Permission of the Department. A student repeating Music N-341 for a second time registers for credit under Music N-342 . (Half Course).

Music N-343 (443). Introduction to Non-Western Music

Prerequisite: Music N-235 or N-245, or approval of the section head. A survey of the art, religious and folk music of non-European cultures. The study includes an examination of cross-cultural parallels and influences, instruments, notations, textures, techniques of performance and problems of interpretation. Illustrated with recordings and slides. (Half course).

Music N-345 (445). Folk Music of North America

Prerequisite: Music N-235 or N-245, or approval of the section head. A survey of the roots and development of traditional music in Canada, the United States, Mexico, Central America and the Caribbean. Areas covered include: aboriginal transplanted and hybrid forms; urban and rural music; transcription and arrangement; the influence of folk music on popular and art styles; ethno-musicological method. Illustrated with recordings, slides, and whenever possible live performances. (Half course).

Music N-351 (251). Stylistic and Formal Analysis

Prerequisite: Music N-235 and N-335 or equivalent. Comparative, in-depth studies of selected works representing various forms, styles and historical periods. (Half course).

NOTE: With the permission of the Department a student may take this course twice for credit. He will register the second time for credit under Music N-352 .

Music N-352 (251). Stylistic and Formal Analysis

Prerequisite: Permission of the Department. A student repeating Music N-351 for a second time registers for credit under Music N-352. (Half course).

Music N-421 (421). Music in Education

Prerequisite: Admission on approval of section head.

A study in depth of the principles governing group instruction in music. Students are made familiar with Orff, Kodaly, Dalcroze, Suzuki and other established and experimental procedures. While the main emphasis is on the cultivation of musicality in the pre-school and school child, the implications for music education in general are also explored. The programme combines lecture-seminars with demonstration and practice teaching. (Full course).

Music N-435 (271, 431, 461). Composition

Prerequisite: Permission of the Department. A student repeating Music N-335 for a second time registers for credit under Music N-435. (Full course).

Music N-465 (465). Seminar on Performance

Prerequisite: Admission on approval of section head. A course intended primarily for students concentrating in music education, composition and musicological disciplines. Discussion and demonstration will revolve around the development of skills, learning problems, interpretation, style, accompaniments, ensemble etc. The topic or theme will vary with each semester, and whenever possible will be determined by specific classroom needs. (Half course).

Music N-471 (471). Independent Study

Prerequisite: Admission on approval of section head. An independent study intended primarily for the student who wishes to do research in an area of his own choice. He may alternatively elect to compose a large scale work or perform an approved program in public recital. Staff members will be available for consultation. (Half course).

Music N-485 (485). Contemporary Idioms and Media

A study in depth that may be explored either independently or in a group. The topic will change with each semester, with the emphasis weighted variously toward electronic composition, films, T.V. and stage music, Jazz, including "third stream" hybrids with "art" styles, improvisations and chance, etc. Whenever possible chamber ensembles will be formed for public performance of student works. (Half course).

THEATRE ARTS

Theatre Arts N-212 (212). Stage Design I

An introductory course in the design of stage scenery and costume. Lectures and studio periods. (Full course).

NOTE: - Students who have credit for Fine Arts 212 or Drama 212 may not take this course for credit.

Theatre Arts N-247 (247). The History of the Theatre

Study of the development of theatrical production and the drama brings before the student the whole shifting scene of manners and customs, ideals and moral standards of the ages. This course traces the development of the theatre from the time of the Greek choric dance to the modern talking-picture and legitimate stage, showing at each step how the culture of that age has been condensed and reflected in the vital and permanent art form of the theatre. (Full course).

NOTE: – Students who have credit for Fine Arts 247, or Theatre Arts 047, or Drama 247 may not take this course for credit.

Theatre Arts N-255 (252). The Arts of Play Production I

A study of the theories of the aesthetics of the theatre and their relationship to the arts contributing to production. Students will participate in a practical programme of one-act productions which will entail work in acting, staging, lighting and scenic design. Lectures, labs and rehearsals. (Full course).

NOTE: - Students who have credit for Fine Arts 252 or Drama 252 may not take this course for credit.

Theatre Arts N-312 (412). Stage Design II

Prerequisite: Theatre Arts N-212. A seminar in the conception and expression of space, form and movement on the stage through visual knowledge and use of light. (Full course).

Theatre Arts N-315 (215). Costuming for the Theatre

Prerequisite: One half credit in drawing or permission of the instructor. An introductory course in costuming for the theatre. Emphasis on history and construction. Students will participate in costuming productions for the Theatre Arts Section. Lectures and labs. (Full course).

NOTE: - Students who have credit for Theatre Arts 015 may not take this course for credit.

Theatre Arts N-331 (231).Creative Drama in the Schools I

Prerequisite: Theatre Arts N-255.

Principles of creative drama for elementary, intermediate and high schools. Theories and practices of techniques and direction. Lectures and labs. (Full course).

Theatre Arts N-355 (455). The Arts of Play Production II

Prerequisite: Theatre Arts N-255. A study of the theories of the aesthetics of the theatre and their relationship to the arts contributing to production. Students will participate in mounting major productions for the Theatre Arts Section which will entail work in acting, staging, lighting and scenic design. Lectures, labs and rehearsals. (Full course).

NOTE: - Students who have credit for Drama 455 may not take this course for credit.

Theatre Arts N-421 (421).Voice and Speech

Prerequisite: Theatre Arts N-255. The theories and practices of communication for the theatre with emphasis on voice mechanics and production. Lectures and practice. (Full course).

NOTE: - Student who have credit for Drama 421 may not take this course for credit.

Theatre Arts N-431 (431). Creative Drama in the Schools (Intermediate)

Prerequisite: Theatre Arts N-331. Discussions and demonstrations of theatre techniques of particular use in elementary, intermediate and high school drama. (Full course).

Theatre Arts N-455 (456). The Arts of Play Production III

Prerequisite: Theatre Arts N-355, A study of the advanced theories of the aesthetics of the theatre and their relationship to the arts contributing to production. Students will participate in a practical programme of productions which will entail work in acting, staging, voice production, pantomime, make-up, lighting and scenic design. Lectures and practice. (Full course).

NOTE: - Students who have credit for Drama 456 may not take this course for credit.

Cognate course

Archaeology N-211. Introduction to Archaeology I

EVENING NON-CREDIT PROGRAMME

Art N-151 (151) (non-credit). Life Drawing

A course in drawing using various media; quick sketches and long studies. This course stresses the development of personal interpretation. (not offered 1971-72).

Art N-152 (152) (non-credit). Painting

Painting in various media. The elements of picture making will be considered. Individual and personal development will be stressed. (not offered 1971-72).

Art N-155 (155) (non-credit). Portrait Sculpture.

An introductory course with the emphasis on characterization and materials, and occasional figure studies.

FRENCH

Paul J.H. d'Hollander, *Associate Professor of French, and Chairman of the Department.*
Léandre Bergeron, *Associate Professor of French.*
Michel Euvrard, *Associate Professor of French.*

Serge Losique, *Associate Professor of French.*
Pierre Parc, *Associate Professor of French.*
Gilbert C. Taggart, *Associate Professor of French.*
Albert Jordan, *Assistant Professor of French.*
Claude Levy, *Assistant Professor of French.*
Jean D. Schneider, *Assistant Professor of French.*
Mair E. Verthuy, *Assistant Professor of French.*

Since university-level credit cannot be given for French conversation only, all language courses contain a varying quantity of written work, grammatical study and civilization material, as well as oral work.

French N-201 (201). Beginners' French

This course is designed for students who lack any previous training in French or who otherwise fail to meet the requirements for admission to French N-211. Intensive class instruction and laboratory drill should permit the student to master the basic structures of French in both their written and oral aspects. Satisfactory progress in this course will admit students to French N-211. Lectures and laboratory. (Full course) (Evening only).

NOTE: - Students who have received credit toward their admission for high-school French may not take this course for credit.

Students whose first language is French, or whose schooling has been conducted in French, will not be admitted to this course.

Any student who is not sure of his standing must consult the chairman of the department prior to registration.

Students who have credit for French 001 may not take this course for credit.

French N-211 (211). Introduction to College French

Prerequisite: French N-201 or four years of high-school French or equivalent. A practical review of structures designed to develop fluency in French by means of intensive oral and written practice. Readings in French-Canadian culture. Lectures and laboratory. (Full course).

NOTE: - Students whose first language is French, or whose schooling has been conducted in French, will not be admitted to this course.

Students who have credit for French 011 or 212 may not take this course for credit.

French N-214 (214). French Language and Composition

Prerequisite: French 011 or 211 or N-211, or equivalent. The course is centered on the difficulties of written French and will proceed from a grammatical review to exercises in composition designed to improve vocabulary, sentence structures etc. (Full course).

NOTE: – Students whose schooling has been conducted in French, will not be admitted to this course.

Students who have credit for French 014 may not take this course for credit.

French N-221 (221). Introduction to French Literature

Prerequisite: French N-211 or 211 or 011, and N-214, or equivalent. No prerequisite for students whose schooling has been conducted in French. This course, designed to act as a preparation for all courses in French Literature, covers the principal literary trends from the Middle Ages to the present day. Students who have taken this course will then be able to relate subsequent and more detailed courses to the general framework of French literature and society, and will have acquired a working knowledge of such essentials as versification and other literary forms, as well as a familiarity with the "explication de texte". This course is conducted in French. (Full course).

NOTE: - Students who have credit for French 021 may not take this course for credit. Students are urged to take this course together with French N-241.

French N-222 (222). Modern French Literature

Prerequisite: French N-211, or 211, or 011, or equivalent. No prerequisite for students whose first language is French. This course is intended mainly for students in Science, Commerce or Engineering, in particular those wishing to take their literature requirement in French. Through study of a limited number of novels, plays and poems of recent years, both French and French-Canadian, the student will have an opportunity to appreciate the characteristics of the different genres. (Full course).

NOTE: - This course is not an acceptable prerequisite for any other French course.

Students who have credit for French 022 may not take this course for credit.

French N-241 (241). Introduction to a History of French Culture and Civilization

Prerequisite: French N-211, or 211, or 011, or equivalent. An overall view of the social, political, material and intellectual aspects of French Civilization, considered from both a historical and a contemporary point of view. This course should provide the framework for a more comprehensive understanding of French Literature. This course is conducted in French. (Full course).

French N-310 (411). French Language and Composition (Intermediate)

Prerequisite: French N-211, or 211, or 011, or equivalent. The course proceeds from a review of the difficulties of written French, on to the sentence and the simplest stylistic values. Introduction to literary composition, description, narration. (Full course).

NOTE: - Students who have credit for French 091 may not take this course for credit.

French N-312 (412). History of the French Language

Prerequisites: French N-211, or 211, or 011, and N-214. This course traces the evolution of the language from the Vulgar Latin period to the present day. The successive stages of this evolution will be illustrated by the study of appropriate texts, especially those of the Old French period. This course is conducted in French. (Full course).

French N-313 (413). French Phonetics

Prerequisites: French N-211, or 211, or 011, and N-214 or equivalent, alternative prerequisite for students whose first language is French; one credit in French language or literature. A descriptive course in French phonetics, including a study of the physiological formation of sounds and their acoustic aspects. Phonetic transcriptions. Teachers of French will find this course particularly useful, as will students planning to do graduate work in French. This course is conducted in French. (Half course).

French N-314 (414). Comparative Stylistics and Translation

Prerequisite: French N-211, or 211, or 011, and N-214 or equivalent; alternative prerequisite for students whose first language is French, one credit in French language or literature. The aim of the course is to investigate the stylistic resources of both French and English and to study comparatively the means available for the expression of the same concept. The course will permit the student to further his knowledge of the different levels of expression in each language, taking into account both syntax and vocabulary. This is not a course in commercial translation. (Full course).

French N-331 (231). French Canadian Literature and Culture

Prerequisite: French N-211, or 211 or 011, or equivalent. An outline of the development of French-Canadian culture from the earliest times to the present day, with particular emphasis on recent developments. This course is conducted in French. (Full course).

NOTE: - Students who have credit for French 031 may not take this course for credit.

French N-381 (481). Teaching Methods in French

Prerequisites: French N-211, or 211, or 011, and N-241, or equivalent, and classroom experience in teaching French, or permission of the department. Principles of Applied Linguistics and their implementation in class. Teaching methods and testing procedures. Outline of audio-visual techniques and their use. The course will facilitate to the maximum degree exchanges of experience and group discussions. (Full course).

French N-410 (410). Advanced Composition and Stylistics II

Prerequisite: French N-214 or N-310. An advanced course designed mostly for students intending to go into graduate studies. Initiation to academic research; the writing of essays, term papers, theses, methodology, the dissertation, literary analysis. (Full course).

French N-417 (417). Structural Linguistics of Contemporary French

Prerequisite: French N-214 or N-310. A descriptive analysis of the linguistic structure of contemporary French. Phonemic, morphosyntactic and lexical aspects of the language considered as a system. Theoretical and practical applications. (Full course).

French N-420 (420). French Mediaeval Literature

Prerequisite: French N-211, or 211, or 011, and N-214, and N-221. Through the reading of modern French versions, this course will explore the literary heritage of the Middle Ages, from "Le Serment de Strasbourg" to the poetry of François Villon. (Full course).

French N-421 (421). French Literature of the 16th Century

Prerequisite: French N-221. Marot; Rabelais, Ronsard and la Pléiade; Montaigne. (Full course).

French N-422 (422). French Literature of the 17th Century

Prerequisite: French N-221. This course covers the great classical period of French literature: the reform of the language, and the formation of the Classical doctrine; the tragic drama of Corneille and Racine; the comedy of Molière; the philosophy of Descartes and Pascal; the moral satire of La Fontaine and La Bruyère; the beginnings of the Novel. (Full course).

French N-423 (423). French Literature of the 18th Century

Prerequisite: French N-221. The "century of the philosophers" - The great interest in scientific knowledge, leading to the composition of the Encyclopédie; Montesquieu, Voltaire, Rousseau; the comedy of Marivaux and Beaumarchais; the poetry of Chenier; the beginnings of the Romantic movement; the literature of the Revolution. (Full course).

French N-425 (425). French Literature of the 20th Century

Prerequisite: French N-221. A study of the work of major French writers from the beginning of the twentieth century to the present day. (Full course).

French N-427 (427). French Poetry from Baudelaire to Valéry

Prerequisite: French N-221. Trends in French Poetry originating with Baudelaire, the Parnassien and symbolist schools, leading to the work of Apollinaire and Valéry. (Full course).

French N-428 (428). Literature of the Romantic Period

Prerequisite: French N-221. The forerunners of Romanticism. - Chateaubriand and Madame de Staël; Lamartine, Vigny, Hugo, Musset. (Half course).

NOTE: - Students who have credit for French 426 may not take this course for credit.

French N-429 (429). The Nineteenth Century Novel

Prerequisite: French N-221. A study of the novel in France from Stendhal to Zola. (Half course).

NOTE: - Students who have credit for French 426 may not take this course for credit.

French N-431 (431). The Contemporary French-Canadian Novel

Prerequisite: French N-331. A study of a selection of important recent French-Canadian novels. (Half course).

French N-432 (432). Contemporary French-Canadian Poetry

Prerequisite: French N-331. A study of the works of important recent French-Canadian poets. (Half course).

French N-461 (461). The French Cinema

Prerequisites: French N-211, or 211, or 011, or equivalent, or permission of the Department. The aim of this course is to study the French cinema in its vital relationship with contemporary French civilization. The course will be divided into two-week periods, each of which will study a particular step in the evolution of the French film, beginning at the close of the last century. (Full course).

NOTE: — With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. A student repeating French N-461 for credit will register under French N-463.

French N-462 (462). The French Theatre

Prerequisites: French N-214, N-221, or permission of the department. This course covers the history of the French theatre, presenting it not only as part of the French literary tradition, but also as a dynamic process. Aspects of staging will be studied from a historical point of view. This course is conducted in French. (Full course).

French N-463 (463). The French Cinema

Prerequisite: permission of the department. A student repeating French N-461 a second time registers for credit under French N-463. (Full course).

French N-491 (451). Advanced Study of a Special Subject

Prerequisites: French N-221; two additional credits in French Literature, at least one of which must be at the '400' level. This course, open only to students majoring or honouring in French, provides the opportunity of studying a subject in depth. Students work individually under a supervisor. (Full course).

NOTE: — With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time under French N-492.

French N-492 (452). Advanced Study of a Special Subject

Prerequisite: French N-491 and permission of the department. A student repeating French N-491 a second time for credit registers under French N-492. (Full course).

Cognate Course

Linguistics N-221. Introduction to Linguistics.

MATHEMATICS

Mathematics N-201. Transcendental Functions

Sets. Field of real numbers. Inequalities. Functions and Graphs. Trigonemetric, exponential and logarithmic functions. (Half course).

NOTE: — Any student who has passed (a) Mathematics 001 or the equivalent or (b) Mathematics 223 or the equivalent may not take this course for credit.

Mathematics N-202. College Algebra

Prerequisite: Mathematics N-201 or equivalent previously or concurrently. Proofs and implications. The natural numbers and the integers. Mathematical induction. Divisibility, the Euclidean Algorithm, primes, the Fundamental Theorem of Arithmetic. Sequences and progressions. Complex Numbers, polynomials, the Fundamental Theorem of Algebra. Combinatorial Mathematics, the Binomial Theorem. Systems of equations, determinants, Cramers' Rule. (Half course).

NOTE: — Any student who has passed (a) Mathematics 002 or the equivalent or (b) Mathematics 213 or the equivalent may not take this course for credit.

Mathematics N-203. Differential and Integral Calculus I

Prerequisite: Mathematics N-201 or equivalent. Functional Notation. Limits and Continuity. Differentiation of Polynomials. The power, product, quotient and chain rules. Implicit differentiation. Higher derivatives. Mean Value Theorem, Rolles Theorem. Maxima and Minima. Applications: Tangents to plane curves, related rates. The differential use in finding approximations. Indefinite and definite integrals, areas and volumes. (Half course).

NOTE: — Any student who has passed (a) Mathematics 003 or the equivalent or (b) Mathematics 451 or the equivalent may not take this course for credit.

Mathematics N-204. Vector Analysis and Analytical Geometry

Prerequisite: Mathematics N-201 or equivalent. Inner and cross products of vectors. Algebraic and vector equations of curves in the plane and in space. Elementary study of surfaces in space. Curves and surfaces in parametric form. Polar, spherical and cylindrical coordinates. (Half course).

NOTE: — Any student who has passed (a) Mathematics 004 or the equivalent or (b) Mathematics 431 or the equivalent may not take this course for credit.

Mathematics N-205. Differential and Integral Calculus II

Prerequisite: Mathematics N-203. Differentiation and integration of Trigonometric functions. Derivatives of Inverse Trigonometric functions, logarithmic functions and exponential functions. Methods of integration by parts, by substitution, by separation into partial fractions. Improper integrals, L'Hopitals' Theorem. Series: Convergency tests, Maclaurin and Taylor Theorems. (Half course).

NOTE: – Any student who passes (a) Mathematics 005 or the equivalent or (b) Mathematics 451 or the equivalent may not take this course for credit.

Mathematics N-206. Matrices and Linear Algebra

Prerequisite: Mathematics N-202. Operations on Matrices. Determinants, Cramers' Rule. Systems, rank. The inverse matrix. The Gauss Jordan Method. Mappings, matrix Transformation. Linear Transformations. Characteristic Values, vectors, Quadratic forms. (Half course).
NOTE: – Any student who has passed (a) Mathematics 006 or the equivalent or (b) Mathematics 411 or N-281 or the equivalent may not take this course for credit.

Mathematics N-207. Probability and Statistics

Prerequisite: Mathematics N-201 or equivalent. Elementary probability, permutations and combinations, Binomial and Normal distribution. Analysis and organization of Statistical data. Tests of hypotheses. Confidence limits. Introduction into Linear regression and Correlation. (Half course).

NOTE: – Any student who passes (a) Mathematics 007 or the equivalent or (b) Mathematics N-241 or the equivalent may not take this course for credit.

NOTE: – For additional courses in Mathematics please consult the Faculty of Science section of this Announcement.

PHILOSOPHY

Stanley G. French, *Professor of Philosophy and Chairman of the Department.*
Paul Germain, *Professor of Philosophy.*
Dallas Laskey, *Professor of Philosophy.*
Roger B. Angel, *Professor of Philosophy.*
Robert E. Carter, *Professor of Philosophy.*
Vladimir Zeman, *Professor of Philosophy.*
M. Mobin Ahmad, *Assistant Professor of Philosophy.*
Christine Garside, *Assistant Professor of Philosophy.*

There are two introductory courses in Philosophy. Philosophy N-210 deals systematically with some specific philosophical problems, while Philosophy N-211 considers in depth six major philosophers.

Philosophy N-210 (211). Problems of Philosophy

A survey of selected philosophical problems in which both contemporary and traditional approaches are critically examined. Specimen topics include: philosophical method, the existence of God, the mind-body problem, freedom and determinism, moral and political obligation. (Full course).

NOTE: – Students who have credit for Philosophy 011 may not take this course for credit.

Philosophy N-211 (212). Philosophical Classics

A critical discussion of selected philosophical classics. Readings will be chosen from Plato, Aristotle, Descartes, Hume, Kant, and one recent or contemporary philosopher. (Full course).

NOTE: – Students who have credit for Philosophy 012 may not take this course for credit.

Philosophy N-221 (253). Introduction to Logic and Philosophy of Science

This course is designed to provide familiarity with the basic problems of Logic and to develop necessary technical skills. In the second part of the course, some important concepts in the Philosophy of Science will be discussed. (Full course).

NOTE: – Students who have credit for Philosophy 053 may not take this course for credit.

Philosophy N-231 (241). Introduction to Ethics

An introduction to theoretical and applied ethics. In this course, attention will be given to the history of ethical thought, and to discussion of contemporary problems. (Full course).

NOTE: – Students who have credit for Philosophy 041 may not take this course for credit.

Philosophy N-271 (271). Contemporary Philosophy

A critical study of selected 20th century philosophers. Movements and figures discussed vary from year to year. Specimen topics include: Pragmatism, Positivism, Existentialism, Linguistic Analysis: Russell, Moore, Whitehead, Dewey, Wittgenstein. (Full course).

NOTE: – Students who have credit for Philosophy 071 may not take this course for credit.

Philosophy N-273 (273). Existentialism

A course designed to acquaint the student with the fundamentals of the existentialist movement as a philosophical perspective. Among philosophers considered will be Kierkegaard, Nietzsche, Heidegger, Sartre, Merleau-Ponty, Jaspers, Marcel, and Camus. (Full course).

NOTE: – Students who have credit for Philosophy 073 may not take this course for credit.

Philosophy N-301 (422). Greek Philosophy

A survey of the principal developments from the Presocratics (600 B.C.) to Plotinus (250 A.D.). Primary emphasis will be placed on the critical reading of selected original sources. The majority of time will be devoted to Plato and Aristotle. (Full course).

Philosophy N-303 (425). Mediaeval Philosophy

Prerequisite: Philosophy N-301. A survey of the principal currents in philosophy from the breakdown of classical culture to the Renaissance (350 A.D. to 1500). Primary emphasis will be placed on the critical examination of representative works. (Full course).

NOTE: — This course will be offered only if the demand is sufficient.

Philosophy N-321 (454). Modern Logic

An introduction to modern logic, its techniques and applications. Coverage of sentential logic, first order predicate logic, naive set theory, relations, functions, and an introduction to set theoretical foundations of the axiomatic method. (Full course).

Philosophy N-361 (261). Philosophical Ideas in Literature

An inquiry into the Philosophy *of* Literature, with detailed study of works exemplifying Philosophy *in* Literature. Authors from East and West will be included, and analysis of alternative theories of human nature will be central to the course. (Full course).

NOTE: — Students who have credit for Philosophy 061 may not take this course for credit.

Philosophy N-365 (465). Studies in Russian Philosophy

Prerequisite: One credit in Philosophy, or permission of the instructor. Study of the main topics in the development of Russian Philosophy. Topics to be discussed include: Nihilism and Anarchism, Tolstoy's Philosophy of History, Dostoyevsky's idea of evil, Marxism. Lectures and seminars. (Full course).

Philosophy N-369 (413). Contemporary Analytic Philosophy

Prerequisites: Two philosophy courses or permission of the intructor. A seminar devoted to the investigation of selected philosophical problems as they arise in the writings of such philosophers as Moore, Russell, Ayer, Carnap, Quine, Wittgenstein, Ryle, Wisdom, Austin, and others. (Full course).

Philosophy N-372 (431). Contemporary Political Thought

Critical analysis of contemporary political-philosophical concepts such as tolerance, violence, séparatisme, racism, and the nationalism of visible minorities. (Half course).

Philosophy N-374 (432). Philosophy of Law

Critical analysis of current and classical legal philosophy. (Half course).

Philosophy N-376 (435). Philosophy of the Social Sciences

Philosophical examination of the structure and methodology of the social sciences. Special attention to problems of functionalism, teleological explanation, and the testing of social theories. (Half course).

Philosophy N-378 (436). Aesthetics

Conceptual problems relating to the production and appreciation of the fine arts. Specimen topics include the nature of the work of art and of artistic expression, artistic criticism, fiction, metaphor, appreciation, and the logic of value judgements. (Half course).

Philosophy N-380 (401). Honours Seminar in Epistemology and Metaphysics

Intensive seminar and tutorial study of major contemporary issues in the theory of knowledge and metaphysics, designed particularly for Honours students in any department. (Full course).

Philosophy N-396 (471). The Study of a Given Thinker

Prerequisite: One credit in Philosophy or permission of the instructor. A seminar course devoted to the study of a major philosopher. Special attention is given to the cultural background, the personal development, and the leading theories of the thinker, as well as to critical evaluations of his work. (Half course).

Philosophy N-401 (421). British Empiricism

Prerequisite: One credit in Philosophy or permission of the instructor. This course studies intensively the works of at least two of Locke, Berkeley, and Hume. (Full course).

Philosophy N-403 (423). Continental Rationalism

Prerequisite: One credit in Philosophy or permission of the instructor. An intensive study of at least two of Descartes, Spinoza, and Leibniz. (Full course).

Philosophy N-405 (424). Kant

Prerequisite: Two credits in Philosophy or permission of the instructor. Critical and intensive seminar study of the philosophy of Kant. (Full course).

Philosophy N-407 (407). Nineteenth Century Philosophy

Prerequisite: One credit in Philosophy, or permission of the instructor. An examination of some of the main currents of post-Kantian thought in the 19th century, with special emphasis on Hegel. Specimen topics include: Schopenhauer, Marx, Kierkegaard, Nietzsche, J.S. Mill, Bradley: Existentialism. Phenomenology. Positivism. Idealism, Utilitarianism. The course will not attempt to cover all of these figures and movements in any one year. (Full course).

Philosophy N-421 (452). Scientific Methodology

Prerequisite: Philosophy N-321 or permission of the instructor. An examination of problems pertaining to the structure of scientific theories and the logic of reasoning. The nature of scientific explanation; the relationship between theory and experiment; the status of theories; geometry and physics; causality; inductive logic and the interpretation of scientific probability. (Full course).

Philosophy N-431 (441). Recent Ethical Theory

Prerequisite: One Philosophy credit or permission of the instructor. A critical analysis of leading contemporary ethical theories from Moore to the present. Special attention is given to the naturalistic fallacy, the reducibility of normative statements, ethical reasoning, and the relation of ethics to psychology and sociology. (Full course).

Philosophy N-480 (490). Honours Seminar in Philosophy and Education

This course must be taken concurrently with Education N-480. (Full course).

Philosophy N-493 (491). Special Topics in Philosophy

Prerequisite: One credit in Philosophy or permission of the instructor. Special topics accommodating the interests of the instructor and students, selected from various areas in philosophy, e.g., value theory, philosophy of mind, philosophy of mathematics, philosophical ideas in literature. (Full course).

NOTE: - With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time under Philosophy N-495.

Philosophy N-495 (492). Special Topics in Philosophy

Prerequisite: Two credits in Philosophy or permission of the instructor. A student repeating Philosophy N-493 a second time registers for credit under Philosophy N-495. (Full course).

Philosophy N-496 (472). The Study of a Given Thinker

Prerequisite: Two credits in Philosophy or permission of the instructor. (Half course).

RELIGION

Charles Davis, *Professor of Religion, and Chairman of the Department.*
Michel Despland, *Associate Professor of Religion.*
Sheila McDonough, *Associate Professor of Religion.*
David Miller, *Associate Professor of Religion.*
Jean Ouellette, *Associate Professor of Religion.*
John Rossner, *Associate Professor of Religion.*
Robert G. Goldenberg, *Assistant Professor of Religion.*

George A.B. Moore, *Assistant Professor of Religion.*
Frederick B. Bird, *Visiting Assistant Professor of Religion.*
Katherine K. Young, *Sessional Lecturer in Religion.*
Jonathan Siegal, *Lecturer in Religion.*

Religion N-213 (213). The Religions of the World

Historical and critical introduction to the study of religion; the religions of the ancient Near East; Greek and Roman religion; Judaism, Zoroastrianism, Manichaeism, Mithraism and Islam; the religions of India, China and Japan. Consideration is given to the philosophical, theological, ethical and cultural implications. (Full course).

NOTE: − Only one full credit will be given from among Religion 211, 212, and N-213.

Students who have credit for Religion 013 may not take this course for credit.

Religion N-231 (231). Religion, Ethics and Society

The course attempts to identify ethical issues facing individuals and societies today (e.g. economic inequality, race relations, nationalism, violence and war, sex and personal identity, affluence and anonymity, etc.). The resources of the Judaeo-Christian understanding of man will be considered and their role in the interpretation and resolution of these ethical dilemmas evaluated. (Full course).

NOTE: − Students who have credit for Religion 031 may not take this course for credit.

Religion N-241 (221). Religion, Science and Philosophy

The place of religion in human culture and its relation to other modes of interpreting human existence, particularly science and philosophy. The methodology of the study of religion; the specific content of the religious affirmations of the Judaeo-Christian tradition; their modes of historical development and symbolic expression. Considerable attention is given to current religious thought. (Full course).

NOTE: − Students who have credit for Religion 021 may not take this course for credit.

Religion N-251 (251). Biblical Studies I: Old Testament Studies

An introduction to the methods and results of contemporary Old Testament scholarship; the history, culture and religion of ancient Israel; critical survey of Old Testament literature. Particular attention is given to the major religious affirmations and theological concepts in this literature which have become central in the subsequent development of the Western religious tradition. (Half course).

NOTE: − Students who have credit for Religion 051 may not take this course for credit.

Religion N-252 (252). Biblical Studies II: New Testament Studies

An introduction to the methods and results of contemporary New Testament scholarship; a critical survey of New Testament literature considering historical setting, history of text, religious and cultural signi-

ficance. Attention is given to the central issues and concepts portrayed in the Synoptic, Johannine and Pauline writings and their importance in the subsequent development of the Western religious tradition. (Half course).

NOTE: – Students who have credit for Religion 052 may not take this course for credit.

Religion N-262 (262). Judaic Studies I: The History of the Jewish People

A history of the Jews in Antiquity, the Middle Ages, and the Modern Period. (Full course).

NOTE: – Students who have credit for Religion 062 may not take this course for credit.

Religion N-411 (411). Hinduism

Prerequisite: Second year standing or one credit in Religion. A comprehensive study of the religion, philosophy, ethics, history and culture of Hinduism. (Half course).

Religion N-412 (412). Buddhism

Prerequisite: Second-year standing, or one credit in Religion. A comprehensive study of the philosophy, ethics and religion of Buddhism, including Zen Buddhism. (Half course).

Religion N-413 (413). Islam

Prerequisite: Second-year standing, or one credit in Religion. A study of the rise and development of Islamic religion and culture, with special attention to mysticism and to modernism. (Full course).

Religion N-415 (415). Judaic Studies II

Prerequisite: Religion N-251 or permission of the instructor.

The concepts and institutions of Rabbinic Judaism. A comprehensive study of the law, ethics, religion, philosophy and culture of the Jewish people in the early post-biblical period. (Half course).

Religion N-416 (416). Judaic Studies III

Prerequisite: Religion N-251 or permission of the instructor. Mediaeval and Modern Jewish thought. (Half course).

Religion N-432 (432). Social Ethics

Prerequisite: Second year standing. A systematic investigation of the dialectical relationship between the individual and society and of the religious dimensions of political activity in the modern world. The course will study the forces of social control as well as the nature of the individual's freedom and responsibility. (Full course).

Religion N-435 (435). Studies in Religious Ethics

Prerequisite: Second year standing. The course will examine the ethical thinking of one or more religious traditions and the relationship of

the ethical thinking with the theology and the socio-cultural context of the religious tradition. The choice of the religious tradition or traditions to be studied shall depend upon the interest and qualifications of the instructor, and may vary from year to year. (Full course).

Religion N-443 (443). Contemporary Philosophy of Religion

Prerequisite: Second year standing. A study of philosophical thought on religion since the Enlightenment with special attention to the background of current problems in the philosophy of religion and to the relation between religious and atheistic thought. (Full course).

Religion N-444 (444). Existentialism, Phenomenology and Religion

Prerequisite: Second year standing. Seminar study of selected works in existentialism and phenomenology. Contemporary issues in religion, philosophy and psychology receive special attention. (Full course).

Religion N-453 (453). Biblical Studies III

Prerequisites: Hebrew N-210 or equivalent, Religion N-251. Studies in Hebrew Bible concentrating on particular books and considering problems of text, history, archaeology, exegesis, etc. (Full course).

Religion N-454 (454). Biblical Studies IV

Prerequisites: Greek N-210, Religion N-252. New Testament Studies concentrating on particular books, and considering problems of text, history, exegesis, etc. (Full course).

Religion N-461 (461). The Religious History of Western Man

Prerequisite: Second-year standing, or one credit in Religion. An advanced conceptual study of the origins and cultural development of selected religious and ideological structures in the history of Western civilization, from its Ancient Near Eastern and Graeco-Roman beginnings through the Classical, Medieval and Modern Periods. The course concludes with a survey of the ways in which political, social, economic, scientific, psychological and philosophical developments from the Renaissance through the 19th groups in contemporary 20th century Western culture. Lectures and assigned basic readings in the overall historical development, with in-depth reading, seminar papers, and discussions on selected topics and problems. (Full course)

NOTE: – Only one full credit will be given from among Religion 241, 242, 243 and N-461.

Religion N-462 (462). From Renaissance Humanism to Puritanism

Prerequisite: Second-year standing, or one credit in Religion. Religious and intellectual movements in the sixteenth century, including Renaissance Platonism, the Protestant, the Radical and the Catholic Reformations. Attention will focus on the relationship between religious and cultural changes. A study will be made of selected works of the following authors: Petrarch, Ficino, Pico, Bruno, Valla, Colet, More, Cranmer, Erasmus, Luther, Munzer, Calvin, Ignatius and Milton. (Full course).

Religion N-463 (463). Religion in Canada

Prerequisite: Second-year standing, or one credit in Religion. The historical development of the major religious traditions in Canada, their influence on the social, political and cultural areas of Canadian life, and their contemporary significance. Attention will also focus on the inter-action of Catholic, Protestant, Jewish, Indian and Eskimo groups. (Full course).

NOTE: – Students who have credit for Religion 261 or 061 may not take this course for credit.

Religion N-464 (464). Byzantine and Russian Christianity

Prerequisite: Second-year standing, or one credit in Religion. The historical, cultural and philosophical significance of Eastern Christianity with particular attention given the Byzantine civilization and the history of Russia. (Full course).

Religion N-491 (448). Special Seminar I

Prerequisite: Two full courses in Religion, or permission of the department. Subject matter will vary from year to year to take advantage of the special interests of the seminar leader. This course will provide opportunities to senior students for discussion and advanced study. (Full course). 1971-72: Topics in Hinduism.

NOTE: – With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time under Religion N-492.

Religion N-492 (449). Special Seminar II

Prerequisite: permission of the department. A student repeating Religion N-491 a second time registers for credit under Religion N-492. (Full course).

Cognate Course

Archaeology N-211. Introduction to Archaeology I

SOCIAL SCIENCES DIVISION

Jack Goldner, *Assistant Professor of Social Science.*

URBAN STUDIES

Urban Studies N-491 (491). Honours Seminar

Prerequisite: Third year honours students in Urban Studies. Each student must prepare and submit an appropriate research paper. (Full course).

APPLIED SOCIAL SCIENCE

Hedley G. Dimock, *Professor of Applied Social Science, and Chairman of the Department.*

Richard D. McDonald, *Professor of Applied Social Science.*
Robert J. Nagge, *Assistant Professor of Applied Social Science.*
J. Alexander Sproule, *Assistant Professor of Applied Social Science.*

Applied Social Science N-212 (212). Introduction to Applied Social Science

This course is an orientation to the field of Applied Social Science with a specific focus on relating to and working with other people. It includes a consideration of personal identity, inter-personal relations and concepts of helping relationships. (Full course)

Applied Social Science N-341 (241). Camp Leadership and Programme Administration

Prerequisite: Previous experience on the staff of a summer camp for a minimum of one summer, or permission of the department. An analysis of the use of the camp setting, programme methods and group experiences in achieving educational goals with children and youth. Consideration of the employment, development and morale of camp staff. Discussion of the effects of various practices on the adjustment and growth of campers. (Half course).

Applied Social Science N-351 (251). Understanding Group Behaviour

This is a laboratory course which includes participating in a group and analyzing such common group dynamics as leadership, communication, decision making, member roles and sensitivity to others. (Half course).

Applied Social Science N-400 (400). Introduction to Social Intervention

Prerequisite: Permission from the Department. Introduction to the principles and practice of social intervention. Approaches to social problem identification and analysis. The role of the social change agent. Elements of working with individuals, groups, and communities. Laboratory periods will permit the application of course content to practice. (Full course).

Applied Social Science N-411 (411). Introduction to Social Gerontology

Prerequisite: A previous course in Psychology, Sociology, or Social Science 210. A multi-disciplinary orientation to the study of old age with emphasis on the biological, psychological and sociological aspects of aging. A seminar course designed to acquaint students of all ages with the growing volume of research on aging. (Half course).

Applied Social Science N-413 (413). Adolescent Behaviour in Urban Areas

Prerequisite: Second-year standing. A survey of adolescent values, family and group relations, social mobility, friendship patterns, educational and vocational adjustment with a focus on understanding social behaviour in urban communities. Attention will also be given to programmes attempting to enhance adolescent development and reduce social problems. (Full course).

Applied Social Science N-421 (421). Administration of Community Serving Agencies

The development of the administrative process and the principles and methods of administration and organization of community agencies. Specific areas of administration analyzed include personnel, financing, maintenance, public relations, personal efficiency and adequate recording processes. (Half course).

NOTE: – Students who have credit for Applied Social Science 221 may not take this course for credit.

Applied Social Science N-431 (431). Group Development and Supervision

Prerequisite: Second-year standing. Orientation to systematic group development in community-serving organizations. Development of understanding and skill in using group procedures to facilitate communication and decision making in small groups, classes and committees. Focus on helping others improve their functioning with groups through supervision and training. Each student will study the development of an agency group throughout the year. (Full course).

Applied Social Science N-441 (441). Community Development

Prerequisite: Sociology N-210. Orientation to systematic community problem-solving dealing with communications, assessment of needs, decision making, and inter-group relations, drawing on the contributions of the social sciences. (Half course).

Applied Social Science N-451 (451). Principles and Practices of Guidance

Prerequisite: Psychology N-211 or Sociology N-210. Principles and methods of counselling and guidance with particular reference to their application in the setting of the community-serving organizations. Organization and administration of a guidance service including measurement and appraisal, techniques of counselling, occupational and educational information, and referral, will be considered. (Half course).

Applied Social Science N-452 (452). Introduction to Counselling

Prerequisite: Psychology N-211 or Sociology N-210; Applied Social Science N-451. A survey of typical problems; information, techniques, principles, policies and points of view useful to professional staff in community-serving organizations; focus on educational, vocational and relationship problems, and the use of counselling techniques in staff relations and supervision. (Half course).

Applied Social Science N-461 (461). Social Welfare and the Social Welfare Services

Prerequisite: Second-year standing, or permission of the department. A general course concerned with social welfare problems in modern society; some analysis of these problems in relation to economic and cultural patterns. A description of the functional settings in which social welfare services are practiced. A consideration of the methods used in social welfare, and some consideration of the connective links between social welfare services and religion, law, medicine, nursing, teaching and other professions. (Full course).

NOTE: – Students who have credit for Applied Social Science 462 may not take this course for credit.

Applied Social Science N-471 (471). Projects Seminar

Prerequisite: Open to all third-year students in Applied Social Science with permission of the department. A seminar course for field projects, surveys and research studies undertaken by each student. (Full course).

Applied Social Science N-481 (481). Special Seminar in Applied Social Science

Prerequisite: Psychology N-211, Sociology N-210 and permission of the department. The subject for the seminar will vary from year to year reflecting recent developments in social change, new approaches in the behavioural sciences, or the special interests of the instructor. (Full course).

Subject 1971-72: to be announced.

NOTE: - With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time under Applied Social Science N-482.

Applied Social Science N-482 (482). Special Seminar in Applied Social Science

Prerequisite: Permission from the Department. A student repeating Applied Social Science N-481 a second time registers for credit under N-482. (Full course).

Applied Social Science N-485 (485). Special Seminar in Applied Social Science

Prerequisite: Permission from the Department. The subject for the seminar will vary from year to year reflecting recent developments in social change, new approaches in the behavioral sciences, or the special interests of students or the instructor. (Half course).

NOTE: – With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time under Applied Social Science N-486.

Applied Social Science N-486 (486). Special Seminar in Applied Social Science

Prerequisite: Permission from the Department. A student repeating Applied Social Science N-485 for a second time registers for credit under Applied Social Science N-486. (Half course).

ECONOMICS

Arthur Lermer, *Professor of Economics, and Chairman of the Department.*
Muriel Armstrong, *Professor of Economics.*
Paul Bairoch, *Professor of Economics.*
Ajit Dasgupta, *Professor of Economics.*
Morido Inagaki, *Professor of Economics.*
John W. O'Brien, *Professor of Economics.*
Shreekant A. Palekar, *Professor of Economics.*
George D. Davidovic, *Associate Professor of Economics.*
George Lermer, *Associate Professor of Economics.*
André A. Martens, *Associate Professor of Economics.*
Balbir S. Sahni, *Associate Professor of Economics.*
Abraham Tarasofsky, *Associate Professor of Economics.*
J. Ahmad, *Visiting Associate Professor of Economics.*
A.·Anastasopoulos, *Assistant Professor of Economics.*
Benson S. Brown, *Assistant Professor of Economics.*
Peter L. Miles, *Assistant Professor of Economics.*
Robert N. Rand, *Assistant Professor of Economics.*
Barry D. Rosenfeld, *Assistant Professor of Economics.*
Morton Stelcner, *Assistant Professor of Economics.*
Franklin F. Mendels, *Visiting Assistant Professor of Economics.*

Commerce students interested in general courses in Economics should take in addition to Economics N-211, – Economics N-311, N-316, N-422, N-428, N-429 or N-434.

Economics N-211 (211). Introduction to Economics.

While this course is an essential introduction for the student who is proceeding to other courses in economics, it is designed to inform every student, whatever his field may be, of some of the basic principles of modern economic theory and their relationships to everyday business. The concept and purpose of national income analysis is explained, and the inter-related problems of consumer spending, saving and investment are discussed with special reference to the banking system, credit policies and the role of government in the business world today. This is co-ordinated with an outline of the theory of the firm and the relation of the individual firm to the whole economy, tracing the process of price determination through ·an analysis of the concepts of competition and monopoly. (Full course).

NOTE: – Students who have credit for Economics 011 or N-212 may not take this course for credit.

Economics N-212 (213). Introductory Economics

Prerequisite: Mathematics 001 and 002 or equivalent. This course will cover the same material as Economics N-211. The mathematical training required will allow the material to be covered somewhat more rigorously. (Full course).

NOTE: – Students who have credit for Economics N-211 or 013 may not take this course for credit.

Economics N-270 (281). Mathematics for Economists I

Prerequisite: Economics N-211 or N-212. In this course, the basic topics of differential and integral calculus will be treated, together with some economic applications. The aim of this course is to equip the student with the elementary tools necessary for understanding the economic literature. (Half course).

NOTE: – Students who have credit for Mathematics 415, 450, 451, or Economics 081 may not take this course for credit.

Economics N-271 (282). Mathematics for Economists II

Prerequisites: Economics N-211 or N-212; N-270 or equivalent. Constrained maximization and minimization; introduction to vector spaces; matrices and determinants; linear programming. (Half course).

NOTE: – Students who have credit for Mathematics 415, 450, 451 or Economics 082 may not take this course for credit.

Economics N-274 (218). The Use of Economic Data

Prerequisite: Economics N-211 or N-212 previously or concurrently. Concepts of economic accounting and related measurement techniques, with special reference to the procedures used in Canada and in international economics institutions like the U.N., I.M.F., and O.E.D. The topics include: national accounts, input-output tables, flow-of-funds accounts, national balance sheets, international and interregional comparison of economic data, choice of index. (Half course).

Economics N-275 (275). Introduction to Statistics for Economists

An introduction to concepts and methods used in the analysis of economic statistics. The course will cover such topics as measures of central tendency and dispersion analysis of time series, frequency distributions, index numbers and an introduction to some of the principles of statistical inference. (Half course).

NOTE: - Only one credit will be given from among Economics N-275, Economics N-471, Geography N-262, Mathematics N-241, Quantitative Methods N-243 and N-244, Statistics 242, Sociology N-241, Psychology N-241 and Psychology N-242.

Economics N-311 (411). Intermediate Microeconomic Theory

Prerequisite: Economics N-211 or N-212. This course is designed for the student honouring or majoring in Economics. It is a basic course in microeconomic theory; market price determination, theory of consumer demand, theory of the firm, and distribution theory. (Full course).

NOTE: – Students who have credit for Economics 091 or 413 may not take this course for credit.

Economics N-312 (413). Microeconomic Theory (Mathematical Approach)

Prerequisites: Economics N-211 or N-212, N-270, N-271 or per-

mission of the Department. This is a course in intermediate microeconomic analysis. It covers the principal mathematical tools required to deal with constrained maximization problems. These tools are used to cover the same topics as in Economics N-311. (Full course).

NOTE: – Students who have credit for Economics N-311 may not take this course for credit.

Economics N-316 (451). Money and Banking

Prerequisite: Economics N-211 or N-212. A general study of the modern theory of income determination and of the principles of commercial and central banking. In particular, the course will deal with the nature and functions of money, national income accounting; some aspects of modern monetary theory, monetary and fiscal policy, commercial and central banking as an instrument of monetary policy, the structure and mechanism of the modern money market, foreign exchange and the problem of inflation. Special emphasis will be laid on monetary and banking problems in Canada. (Full course).

NOTE: – Students who have credit for Economics 051 or N-318 may not take this course for credit.

Economics N-318 (452). Intermediate Macroeconomic Theory

Prerequisite: Economics N-211 or N-212. A basic course in macroeconomic and monetary theory; with particular reference to the role of monetary institutions and monetary policies. (Full course).

NOTE: – This course is intended primarily for students honouring and majoring in Economics. Others should take Economics N-316.
Students who have credit for Economics N-316 may not take this course for credit.

Economics N-330 (221). Introduction to Economic History

This course is built about the central theme of the nature of economic evolution including industrialization. The concept of change in economic organization and institutions will be discussed not only in terms of its effect on the economic life of society, but also with respect to its influence on social, political, and cultural conditions. In keeping with a global view, attention will be given to the non-western world, with emphasis on the nature of contemporary underdevelopment. (Full course).

Economics N-404 (431). Economic Policy I

Prerequisite: Economics N-211 or N-212. A study of government policies of resource allocation with emphasis on Canadian policy problems. Topics will include government regulation of business, agriculture policy, transportation policy, and tariff policy. (Half course).

Economics N-405 (432). Economic Policy II

Prerequisite: Economics N-211 or N-212. A study of trade government stabilization, growth, and welfare policies with emphasis on Canadian policy problems. Topics will include monetary and fiscal policies, policies to encourage growth, and social security policies. (Half course).

NOTE: – Students who have credit for Economics 431 before 1969-70 may not take this course for credit.

Economics N-411 (412). Advanced Microeconomic Theory

Prerequisites: Economics N-211 or N-212; N-311 or N-312; or permission of the department. An extension of Economics N-311 with special emphasis on the theory of the firm and the theory of distribution. (Full course).

Economics N-412 (484). Mathematical Models in Economics

Prerequisites: Economics N-470, N-471 or permission of the Department. An examination of static and dynamic economic models including applications of differential and difference equations. Lectures and practice period. (Half course).

Economics N-413 (485). General Equilibrium Analysis

Prerequisite: Economics N-412 or permission of the Department. An introduction to general equilibrium analysis, including applications of matrix algebra. Lectures and practice period. (Half course).

Economics N-415 (421). History of Economic Thought

Prerequisites: Economics N-311 or N-312; N-316 or N-318. A brief study of the development of economic thought, with special emphasis on the classical and Neo-classical period, as an introduction to modern economic theories. Designed primarily for Honours students. (Full course).

Economics N-418 (453). Advanced Macroeconomic Theory

Prerequisites: Economics N-211 or N-212; N-316 or N-318. An extension of Economics N-318 with emphasis on some of the contemporary literature. (Full course).

Economics N-420 (454). Public Finance and Fiscal Policy

Prerequisite: Economics N-311 or N-312 or N-316 or N-318 previously or concurrently. A general study of the principles and practice of government finance; taxation powers and practice in Canada by the federal, provincial and municipal governments; taxation theories; the use of the budget to influence the economy; techniques of deficit and surplus finance; the public debt. (Full course).

Economics N-422 (461). International Economic Relations

Prerequisite: Economics N-211 or N-212. Postwar international institutions: IMF, GATT, etc. The international monetary system, its problems and proposed reforms. Currency areas, exchange control systems and clearing systems. European integration and the common market. (Half course).

Economics N-423 (462). Theory of International Trade

Prerequisites: Economics N-211 or N-212; N-311 or N-312. A study of the theories of comparative costs and reciprocal demand and their development; the theory of factor reward equalization; the theory of foreign exchanges; the theory of tariffs, customs union theory, and related topics in the theory of international trade. Emphasis will be placed upon the theoretical rather than the institutional analysis of international economics, though the theories will be illustrated by consideration of current problems in international economic affairs. (Half course).

Economics N-426 (426). Urban Economics

Prerequisite: Economics N-211. This course will focus on the basic issues of explaining the process of economic growth and stagnation, the problems of the urban public economy, and special urban problems such as pollution, congestion, poverty, and housing and urban renewal. (Half course).

Economics N-427 (427). Regional Economics

Prerequisites: Economics N-311 or N-312; N-316 or N-318 previously or concurrently or permission of the Department. The primary emphasis is placed upon techniques and methods of regional economic analysis. Among the topics included are: conceptual problems in regional accounting; regional cycles; inter-regional trade theory; input-output analysis in a regional context; measures and analysis of industrial location; and public expenditure analysis in an urban-regional setting. (Half course).

Economics N-428 (472). Labour Economics

Prerequisite: Economics N-311 or N-312 or N-316 or N-318 previously or concurrently. A study of the theoretical aspects of the labour market; the historical theories of wages; the derivation of demand and supply curves of labour; the theory of wage differentials; labour force measurement; the relation between wage changes and employment; wages and prices; labour productivity and labour's share of national income; types and theories of unemployment; problems of full employment; public policy on wages. These topics will be illustrated by relevant statistical and other material relating to Canada. (Half course).

NOTE: – Students who have credit for Economics 271 or 471 before 1969-70 may not take this course for credit.

Economics N-429 (471). Industrial Relations

Prerequisite: Economics N-211 or N-212. A study of the general and practical problems that arise in the labour field, such as collective bargaining, the legal framework for the settlement of industrial disputes, the weapons of industrial conflict; the labour movement; contemporary labour issues, such as automation, cost-push inflation and structural unemployment. These topics will be illustrated by facts relating to industrial relations in Canada. (Half course).

Economics N-430 (420). Economic History of Modern Europe

Prerequisite: Economics N-311 or N-312 or N-316 or N-318 or permission of the Department. The course will explore the causes and consequences of the British Industrial Revolution and its diffusion to the Continent in terms of differential national growth patterns and social problems associated with economic change. It will include an analysis of free trade, economic nationalism, the new imperialism, the importance of the crisis of 1929 in terms of economic organization, thought and policy and post World War II reorganization, in terms of planning the welfare state, and economic integration. (Full course).

Economics N-434 (424). Economic History of Canada

Prerequisite: Economics N-311 or N-312 or N-316 or N-318 or permission of the Department. This course is designed to introduce the student to Canadian economic development from the early period of settlement to the present day. Emphasis will be placed on the economic history of Canada since Confederation. (Full course).

Economics N-438 (428). Economic History and Development of the United States

Prerequisite: Economics N-311 or N-312 or N-316 or N-318 or permission of the Department. This course will deal with the economics of the colonial period, the economic causes of the American Revolution, the role of the North Atlantic Triangle (the U.S., Great Britain and Canada). American economic development prior to and after the Civil War until and including the Great Depression. Following the New Deal period emphasis will be placed on the war economy and postwar economic development. The Postwar U.S. international trade and aid policy will also be covered. (Full course).

Economics N-440 (422). Economic Development

Prerequisites: Economics N-211 or N-212; N-311 or N-312. A study of the general principles and problems of economic development. There will be some empirical analysis of problems of capital formation, fiscal policies, population growth, foreign investment, and supply of entrepreneurship in selected countries. The theoretical analysis will examine critically the content and applicability of the various growth models including the classical, Marxist, Schumpetarian, Harrod-Domar, Rostow models of economic growth and techniques of development planning in terms of investments criteria and priorities. (Full course).

NOTE: – Students who have credit for Economics N-442 or N-443 may not take this course for credit.

Economics N-442 (488). Quantitative Development Economics I

Prerequisites: Economics N-211 or N-212; N-271 or equivalent; N-311 or N-312. Methods of national accounting and input-output analysis for underdeveloped countries. Methods of comparing standards of living. Patterns of economic development. Appraisal of models constructed on the premises of modern theories of economic development. (Half course).

NOTE: – Students who have credit for Economics N-440 may not take this course for credit.

Economics N-443 (489). Quantitative Development Economics II

Prerequisite: Economics N-442. The model of economic policy. Planning in stages. The model of linear activity analysis and efficient decentralization of economic decisions. Planning of efficient accumulation of capital. Individual project evaluation. Foreign aid and debt service models. Projection of manpower requirements. Evaluation of empirical applications of optimum planning to underdeveloped economies. (Half course).

NOTE: – Students who have credit for Economics N-440 may not take this course for credit.

Economics N-446 (423). The Economic Development of Quebec

Prerequisite: Economics N-211 or N-212. This course will review past and present trends in the economic development of Quebec, though emphasis will be placed on the economic growth of Quebec since the Second World War. Attention will be given to the regional aspects of its growth problems. (Half course).

Economics N-447 (430). Studies in African Economic Growth

Prerequisite: Economics N-311 or N-312 or N-316 or N-318 or permission of the Department. This course is designed to trace the unique characteristics of African economic development as a whole, including contrasting patterns in the economic structures of the continent. Special emphasis will be placed on regional differentiation with particular concern for tribal versus integrated economic organization. (Half course).

Economics N-448 (425). Studies in Asian Economic Growth

Prerequisite: Economics N-311 or N-312 or N-316 or N-318 or permission of the Department. This course is designed to deal primarily with the economic growth of South East Asia and includes comparative studies of Japan and India, etc. Policy problems related to the acceleration of economic development of the area will be emphasized. (Half course).

Economics N-449 (429). Studies in Latin American Economic Growth

Prerequisite: Economics N-311 or N-312 or N-316 or N-318 or permission of the Department. This course deals with the socio-political background of the area since the establishment of independence in the respective nations. Emphasis on the role of ideologies, governments in the process of economic growth. Entrepreneurship, capital formation, agriculture, interregionalism, and external economic aid. (Half course).

Economics N-460 (445). Contemporary Economic Systems

Prerequisite: Economics N-211 or N-212. A comparative study of contemporary economic systems. While mainly concerned with the institutional features of contemporary free market economies, the course will also deal with their counterpart, the systems of a command economy and a Socialist market economy. Of primary interest will be the institutions, mechanisms and policies which govern allocation, efficiency, growth and distribution of income, with emphasis on the historical background

of the institutions and the social, political and ideological influences which continue to shape them. (Full course).

Economics N-464 (444). Marxian Economics

Prerequisite: Economics N-211 or N-212. Marx's major thoughts on ideology, methodology and economics. (Half course).

Economics N-465 (443). Soviet Economics

Prerequisite: Economics N-211 or N-212. A study of those features of the Soviet economy which particularly distinguish it from Western economies. The course includes a historical survey of present institutional arrangements, an analytical examination of the changing nature of the problem of the Soviet economic system, and deals with the 1962-63 reforms, the rediscovery of market, and the current Soviet discussions on price theory. (Half course).

NOTE: – Students who have credit for Economics 444 before 1969-70 may not take this course for credit.

Economics N-468 (447). Theory and Practice of Cooperation

Prerequisite: Economics N-211 or N-212 or permission of the Department. The purpose of this course is to establish and analyse the theoretical framework of "Cooperation" and to review its application to various facets of the economy. (Full course).

Economics N-470 (480). Mathematics for Economists III

Prerequisite: Economics N-271 or permission of the Department. Quadratic forms, introduction to differential equations and difference equations. (Half course).

Economics N-471 (481). Mathematics for Economists IV

Prerequisite: Economics N-470 or permission of the Department. Differential and difference equations, introduction to calculus of variations. (Half course).

NOTE: – Only one full credit will be given from among Economics N-471, N-275. Geography N-262, Mathematics 241, Quantitative Methods N-243 and N-244, Statistics 242, Sociology N-241, Psychology N-241 and N-242.

Economics N-476 (482). Introduction to Econometrics I

Prerequisites: Economics N-211 or N-212; N-270 or N-271, N-275 or Quantitative Methods N-243 and N-244 or permission of the Department. Application and methods of econometrics based on the study of a number of simple economic models. This course does not use any matrix algebra. It is intended as a general introduction to the field. (Half course).

Economics N-477 (483). Introduction to Econometrics II

Prerequisite: Economics N-476 or permission of the Department. A treatment of estimation techniques for single and multi-equation models. Problems that arise in econometric estimation procedures, such as sig-

nificance, bias, consistency, identification, etc., will be treated in reference to a simple macro-econometric model of real economy. (Half course).

NOTE: – Students who have credit for Economics 482 before 1969-70 may not take this course for credit.

Economics N-490 (491). Advanced Study in a Special Subject

Prerequisite: Permission of the department. This course is designed primarily for honours and major students. Its purpose is to provide an opportunity for advanced students to intensify their study beyond the traditional areas of specialization already represented by the curriculum. The selected subject will vary with the special interest of the instructor offering the course in any given year. (Full course).

NOTE: – With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time under Economics N-491.

Economics N-491 (492). Advanced Study in a Special Subject

Prerequisite: Permission of the department. A student repeating Economics N-490 a second time registers for credit under Economics N-491. (Full course).

Economics N-493 (493). Advanced Study in a Special Subject

Prerequisite: Permission of the Department. This course is designed primarily for honours and major students. Its purpose is to provide an opportunity for students to intensify their study beyond the traditional areas of specialization already represented in the curriculum. The selected subject will vary with the special interest of the respective instructor offering the course. (Half course).

NOTE: – With the permission of the Department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time under Economics N-494.

Economics N-494 (494). Advanced Study in a Special Subject

Prerequisite: Permission of the Department.
A student repeating Economics N-493 a second time registers for credit under Economics N-494. (Half course).

EDUCATION

Jitendra Bhatnagar, *Professor of Education, and Chairman of the Department.*
Douglass B. Clarke, *Professor of English and Fine Arts.*
John L. Harrison, *Professor of Education.*
Mark Braham, *Associate Professor of Education.*
Harold Entwistle, *Associate Professor of Education.*

Thomas S. Allan, *Visiting Associate Professor of Education.*
Martha Crampton, *Assistant Professor of Education.*
Frances Friedman, *Assistant Professor of Education.*
P. David Mitchell, *Assistant Professor of Education.*

Education N-201 (212). The Nature and Function of Teaching

An introduction to the purpose, theories and methods of teaching. (Full course).

Education N-215 (215). Developmental and Educational Psychology of Early Childhood

Prerequisite: Psychology N-211. This course will study the affective and cognitive development of the child from birth to six years of age with particular reference to familial and other social psychological aspects and their implication for teaching and learning. (Full course).

Education N-261 (261). Subject and Methods of Early Childhood Education

Students in this course will be concerned with the following topics: art, music and dance, drama, language, number, and environmental studies. They will specialize in three topics. (Full course).

Education N-416 (455). Education of the Gifted

Prerequisites: Psychology N-211; Education N-215. This course will discuss the special educational problems of gifted children; it will also assess the effectiveness of the techniques usually employed to deal with these problems. (Half course).

Education N-417 (442). Education of the Culturally Disadvantaged

Prerequisite: Sociology N-210. This course will describe the cognitive, social and emotional problems of culturally disadvantaged children and discuss educational techniques for coping with their problems. (Half course).

Education N-421 (421). Sociology of Education

Prerequisite: Sociology N-210. The social organization of education activities. The role of educational institutions in socialization, social control and technology. Education and stratification, mobility and social change. (Full course).

NOTE: – Students taking this course for credit cannot register for Sociology N-451 for credit.

Education N-430 (411). Philosophy of Education

Prerequisite: Philosophy N-210. The application of philosophical method with particular reference to the aims, methods, discipline and concepts of education is considered in this course. Students will be expected to become familiar with the principal authors and with the current periodical literature in the field of Philosophy of Education. (Full course).

Education N-441 (431). History of Educational Ideas

Prerequisite: One '200' level credit in History. In this course stu-

dents will study major educational ideas and idea systems. These will be reviewed in philosophical, religious, political and social perspective. (Full course).

NOTE: – Students who have credit for Education 211 may not take this course for credit.

Education N-442 (422). Education in Canada

Prerequisite: A course in Canadian History. It is advisable that students have a reading knowledge of French. This course will study the history of Canadian Education, and, more particularly, the history of Education in Quebec. (Half course).

Education N-451 (451). Comparative and International Education

Prerequisite: Education N-201. The study of educational systems, at home and abroad, with particular emphasis on educational practice in the United States, the United Kingdom, Western Europe, the Soviet Union, China and the Third World. (Full course).

Education N-453 (453). Education in Quebec

Students in this course will study the contemporary movements in and structures of Quebec Education. (Half course).

Education N-461 (461). Early Childhood Education

This course will provide an introduction to the major problems, practices, processes and theories of education for pre-school and kindergarten children and will stress the developmental needs of the pre-school teacher as part of her professional activities. (Full course).

Education N-465 (459). Adult Education

Prerequisite: One course in Education. This course will study the history, philosophy, organization, and special problems of formal and informal adult education, with particular reference to current developments in Canada. (Half course).

Education N-480 (490). Honours Essay in Education and Philosophy

This course must be taken concurrently with Philosophy N-480. (Full course).

Education N-490 (412). Seminar in Epistemology and Education

Prerequisite: Education N-430 or permission of the instructor. Theories of knowledge are considered in this course, with special attention being given to the bearing of such topics as perception, evidence, truth, knowing and belief on educational thought and practice. Students will be expected to become familiar with recent periodical and other literature in the field. (Half course).

Education N-491 (413). Seminar in Ethics and Education

Prerequisite: Education N-430 or permission of the instructor. Students in this course will study the principles and methods of moral justification in education. They will be referred to the writing of main authors and recent periodical literature. (Half course).

Education N-492 (414). Seminar in Aesthetics and Education

Prerequisite: Education N-430 or permission of the instructor. The nature of aesthetic value and experience, and theories of art and beauty will be examined. The development of the emotions and imagination and their functions in aesthetic awareness are central concerns of this course. Students will be expected to become familiar with the relevant literature in the field. (Half course).

Education N-493 (415). Seminar in Philosophy and Education

Prerequisite: Education N-430 or permission of the instructor. This is an advanced seminar in philosophical analysis and theory in which students will present papers on, and conduct discussions about, educational concepts, aims and practices. Students will be expected to become conversant with the periodical and other literature in the areas under discussion. (Half course).

Cognate Course

Psychology N-482. Psychology of Human Learning in the Classroom

COURSES FOR TEACHERS

The following courses are offered under the conditions listed below:

1. They are approved only for 1971-72, 72-73 and 73-74.
2. Registration in them is limited to teachers.

Education N-436 (416). Education and Moral Development

Prerequisite: One credit in Education, Philosophy or Religion. This course will deal with the moral development of children and adolescents with special attention to the ethical and religious implications for education. (Full course).

Education N-471 (492). Research Methods for Educational Change

Prerequisite: Teaching experience desirable. This course will review the use of research in promoting educational change. Students will be expected to design and carry out small research projects with a view to improving the teaching-learning process. (Half course).

GEOGRAPHY

D.A. Fraser, *Professor of Geography and Chairman of the Department.*
Bogdan Zaborski, *Professor of Geography.*
Ronald W. Bryant, *Associate Professor of Geography.*
Harry A. Clinch, *Associate Professor of Geography.*
M. Aylmer MacFarlane, *Assistant Professor of Geography.*
Michael Marsden, *Associate Professor of Geography.*
James M. Meade, *Assistant Professor of Geography.*
Brian Slack, *Assistant Professor of Geography.*
James W. Young, *Assistant Professor of Geography.*

Geography N-211 (211). Introduction to Human Geography

A study of the evolution of the earth's populated area and the gradual enlargement of geographical horizons. The emphasis will be on cultural distributions, landscape and settlement, and the geography of economic, social, and political activities. (Full course).

NOTE: – Students who have credit for Geography 011 may not take this course for credit.

Geography N-261 (261). Introduction to Cartography

A general study of the map as the tool of the geographer. Assignments of a practical nature will emphasize the history, design, drawing and the use of maps, projections, models, qualitative and statistical methods, air photos, and surveying. (Full course).

NOTE: – Students who have credit for Geography 061 may not take this course for credit.

Geography N-262 (242). Quantitative Geography

Prerequisite: One credit in Collegial Mathematics or equivalent. An introduction to quantitative methods with special application to Geography. Lecture and laboratory. (Full course).

NOTE: – Only one full credit will be given from among Economics N-471, N-275, Geography N-262, Mathematics 241, Quantitative Methods N-243 and N-244, Statistics 242, Sociology N-241, Psychology N-241 and N-242.

Geography N-271 (231). Introduction to Physical Geography

An introduction to the earth sciences as they relate to the environment of man, with special emphasis upon weather, climate and the evolution of landscape. (Full course).

NOTE: – Students who have credit for Geography 232 or 031 may not take this course for credit.

Geography N-316 (416). Human Geography

Prerequisite: Geography N-211, or enrolment in an honours or department major programme in a Social Science. A study of the historical development and methods of research of Human Geography. The course will focus on the following topics: distribution of population, geography of health, distribution of race, language and religion, settlement geography, and the cultural landscape. (Full course).

Geography N-321 (451). Environment and Non-Literate Culture in Africa, Europe and Asia

Prerequisite: Geography N-211, or enrolment in an honours or department major programme in a Social Science. A basic study of the inter-relationships of physical environment and cultures from Man's earliest times to the present with the emphasis on the ancient past. The course is divided into two parts, food-gathering man and food-producing man. (Full course).

Geography N-331 (431). Urban Geography

Prerequisite: Geography N-211, or enrolment in an honours or department major programme in a Social Science or the Faculty of Commerce. A study of the prehistoric town, the Greek and Roman town, towns in the Middle Ages, the trading city, the pioneer town and the modern metropolis. The distribution of such towns, their development, growth and internal pattern of organization will be looked at from an historical and geographical point of view. Problems of conurbations and large metropolitan cities in the present age will be discussed and evaluated. Special emphasis will be given to Canadian cities, to their site, function, organization, growth and development as well as to urban problems relating to zoning, transportation, urban renewal, etc. (Full course).

Geography N-341 (441). Geography of Canada, Past and Present

Prerequisite: Geography N-211, or enrolment in an honours or department major programme in a Social Science or the Faculty of Commerce. A study of Canada, past and present, based on the various natural regions into which the country is divided. In the first half of the course an historic-geographical approach will be taken to bring to the student's attention the main trends in Canadian cultural and historical development from aboriginal times to the present. The changing nature of man-land relationships at different periods of time, and under different forms of occupance will receive particular attention. In the second half of the course the present day pattern of human occupance on a regional and national basis will be analysed. Special studies on regional problems and on particular economic, social, or political lines of general interest will be included in the course. All students will be expected to complete a term paper for credit. (Full course).

Geography N-343 (443). Geography of the U.S.S.R.

Prerequisite: Geography N-211, or enrolment in an honours or department major programme in a Social Science. A study of the interaction between physical zonal patterns and the distribution of population and its activities. Consideration will be given to the evolution of Slavic, Turkic and other ethnic groups, and to the territorial expansion of Rus', Russia, and the U.S.S.R. (Full course).

Geography N-345 (445). Study of a Selected Region

Prerequisite: Geography N-211, or enrolment in an honours or department major programme in a Social Science.

The selected major region of the programme may vary from year to year to take advantage of the area of specialization of the instructor. (Full course).

NOTE: – With permission of the Department, a student may take this course twice for credit, provided that a different region is dealt with a second time. A student seeking a second credit will register for credit under Geography N-346.

Geography N-346 (445). Study of a Selected Region

Prerequisite: Permission of the Department. A student taking N-345 for credit a second time registers under Geography N-346. (Full course).

Geography N-355 (455). Economic Geography

Prerequisite: Geography N-211, or enrolment in an honours or department major programme in Economics or the Faculty of Commerce. A survey of location and spatial interaction studies. Attention will be focused on the problems, models, and methods of these studies. (Half course).

NOTE: – Students who have credit for Geography 251 may not take this course for credit.

Geography N-357 (457). Resource Utilization and Conservation

Prerequisite: Geography N-211, or enrolment in an honours or department major programme in Economics or the Faculty of Commerce. The resource concept and concepts of conservation. The regional approach to resource management. Case studies of the problems in developing particular natural resources and of interstate areas of poor economic health, with emphasis on the regional and natural parts of such developments. Special emphasis will be given to Canadian problems and those of selected underdeveloped countries. (Full course).

Geography N-371 (471). Biogeography

Prerequisite: Geography N-271, or enrolment in an honours or department major programme in the Faculty of Science. A study of past distribution and dispersal of plants and animals with emphasis upon their present pattern of geographic distribution. (Full course).

Geography N-372 (472). Physical Geography

Prerequisite: Geography N-271, or enrolment in an honours or department major programme in the Faculty of Science. A review of modern theories and techniques in geomorphology, hydrology, pedology, denudation chronology, and landscape classification. The course includes a discussion of the Pleistocene Epoch in terms of applied research methods. (Full course).

Geography N-373 (473). Climatology

Prerequisite: Geography N-271, or enrolment in an honours or department major programme in the Faculty of Science. The broad aspects of world regional climates considered from the point of view of both physical and dynamic climatology. The course includes practical work. (Full course).

Geography N-391 (461). History of Geographical Thought

Prerequisite: Geography N-211. A study of the development of the field of geography from ancient times down to the present. Representative geographical works of the Greeks, the Romans, and of the Middle Ages. The Age of Discovery, the 19th and the 20th centuries will be examined and discussed. The present day concepts of the field and function of geography will receive special attention. (Half course).

Geography N-412 (412). Political Geography

Prerequisite: Geography N-316 or N-355. A systematic approach to

Political Geography, at the international and intra-state scales. Emphasis will be on the role of geopolitics and on the interaction of socio-economic fields with politico-administrative spatial structures. (Full course).

Geography N-421 (421). Historical Geography of the United States.

Prerequisite: Geography N-316. A study of the patterns of colonisation and settlement. Some emphasis will be placed on the evaluation of various approaches used in the writing of historical geography. (Full course).

Geography N-422 (422). Historical and Political Geography of Quebec and Ontario

Prerequisite: Geography N-341. A study of a historical nature of past geographic patterns – economic, social, cultural and political in Quebec and Ontario. (Full course).

Geography N-423 (411). Historical and Political Geography of Europe

Prerequisite: Geography N-316. A regional survey of the geographical evolution of European nations and states. Consideration will be given to cultural differentiation and to the distribution of population. (Full course).

Geography N-434 (434). Applied Urban Geography

Prerequisite: Geography N-331. A study of urban centres today with the emphasis on the problems arising from urban growth. Attention will be given to the various ways of guiding urban growth – zoning by-laws, and European development controls, and the possibilities of planned development. (Full course).

Geography N-455 (454). Geography of Regional Development

Prerequisite: Geography N-355. Regional and inter-regional systems of economic exchange, communications and transportation will be studied in terms of their relationship to the character of regions, and their patterns of development. (Half course).

Geography N-456 (456). Geography of Manufacture

Prerequisite: Geography N-355. An examination of the factors affecting the location of industries and industrial regions, and of the various theories of industrial location. (Half course).

Geography N-457 (460). Geography of Transportation

Prerequisite: Geography N-355. A study of patterns of transport facilities and traffic flows. Emphasis will be on general concepts of route alignment, network layouts, and on applications of spatial interaction models to economic flows. (Half course).

Geography N-458 (458). Geography of Agriculture

Prerequisite: Geography N-355. Classification of agricultural systems and theories of their locations will be studied. Particular attention will be given to ecological and behavioural approaches with special reference to under-developed economies, and the spatial dif-

fusion of innovations. There will be some consideration of land use mapping and of land potential assessment. (Half course).

Geography N-459 (459). Geography of Market Centres
Prerequisite: Geography N-355. Central Place Theory and the hierarchy of market centres will be outlined. Attention will be given to cultural and temporal variations, and to applications in marketing geography and retail planning. (Half course).

NOTE: – Students who have credit for Geography 456 before 1969-70 may not take this course for credit.

Geography N-466 (466). Applied Cartography
Prerequisites: Geography N-261 and two additional credits in Geography. Advanced techniques in map and diagram making and usage related to all aspects of human and physical geography, with special emphasis on the practical solution of cartographic problems. Practice periods and assignments. (Full course).

Geography N-474 (474). Applied Climatology
Prerequisite: Open to third year students with one credit at the '300' level in physical geography. An introduction to the various fields of applied climatology with particular emphasis on problems and methods in bioclimatology and climatic change. The course includes practical work. (Full course).

Geography N-475 (475). Hydrology
Prerequisite: Open to third year students with one credit at the '300' level in physical geography. The theories and practices of hydrology with emphasis upon the geographical aspects and resource utilization. Includes an introduction to glaciology. (Full course).

Geography N-491 (492). Research Methods
Prerequisite: Permission of the Department. A selected review of the methods and techniques used to acquire and process original geographical information in the field and laboratory. Includes field work and practical sessions. (Full course).

Cognate Course
Linguistics N-221. Introduction to Linguistics

HISTORY

John L. Hill, *Associate Professor of History and Chairman of the Department.*
E.E. McCullough, *Professor of History.*
J. Cameron Nish, *Professor of History.*
Lionel Rothkrug, *Professor of History.*
George Rude, *Professor of History.*
Jean-Pierre Wallot, *Professor of History*

Alan H. Adamson, *Associate Professor of History.*
Frank A. Chalk, *Associate Professor of History.*
J. Terry Copp, *Associate Professor of History.*
Donald Ginter, *Associate Professor of History.*
John F. Laffey, *Associate Professor of History.*
Stephen Scheinberg, *Associate Professor of History.*
Irving H. Smith, *Associate Professor of History.*
Robert Wall, *Associate Professor of History.*
Charles L. Bertrand, *Assistant Professor of History.*
Frederick Bode, *Assistant Professor of History.*
Robin B. Burns, *Assistant Professor of History.*
Richard J. Diubaldo, *Assistant Professor of History.*
Frederick H. Krantz, *Assistant Professor of History.*

History N-210 (213). History of Europe in the Modern World
A survey of European civilization from the 15th century to the present day. An attempt is made to present an integrated picture of all aspects of European culture in the period of its rise to a dominant position in the world. (Full course).

NOTE: – Students who have credit for History 013 may not take this course for credit.

History N-211 (211). History of Ancient and Medieval Civilization
The story of early mankind is outlined, and the origins of the great civilizations of Europe and Asia are studied. After surveying the classical civilizations, the course concludes with a study of the medieval period. (Full course).

NOTE: – This course does not fulfill prerequisite requirements for advanced courses in History.

Students who have credit for History 011 may not take this course for credit.

History N-221 (221). History of Canada Since 1534
A study of the growth of Canada from the age of exploration to the present time. Emphasis is placed on the political, economic and cultural developments which are of significance in the understanding of the problems of today. (Full course).

NOTE: – Students who have credit for History 021 may not take this course for credit.

History N-251 (251). History of the United States
This course deals with the growth of the United States from the time of discovery to the present time. The character of the population, the government, and the various voluntary political and labour organizations is studied from an historical point of view. Special attention is paid to the development of foreign policy and to the present position of the country in world affairs. (Full course).

NOTE: – Students who have credit for History 451 or 051 may not take this course for credit.

History N-261 (261). Asia and Africa in Modern History

A survey of the history of Asia and Africa in modern times, stressing the interaction between the indigenous civilizations of these continents and that of the West, and the inter-relationships between developments in Eastern and Southern Asia, the Middle East, and Africa. (Full course).

NOTE: — Students who have credit for History 461, 061, or 462 may not take this course for credit.

History N-321 (423). Canada in Colonial Period: 1500-1840

Prerequisite: History N-210 or N-221. An intensive study of Canada from European contact to the Act of Union. (Full course).

History N-322 (424). Modern Canada: 1840 to the present

Prerequisite: History N-210 or N-221. An intensive study of the political, economic and cultural development of Canada since the Act of Union. (Full course).

NOTE: — Students who have credit for History 024 may not take this course for credit.

History N-323 (422). French Canada to 1840

Prerequisite: History N-210 or N-221. An intensive study of Canada during the colonial regime. Much of the material will be in French. (Full course).

History N-324 (426). Quebec: 1840 to the present

Prerequisite: History N-221 or N-322 previously or concurrently. An intensive study of Quebec since the Act of Union. While due importance will be devoted to the political history of Quebec, the purpose of the course is to provide a study in depth of the social economic and cultural institutions of Quebec. (Full course).

History N-331 (412). History of Medieval Europe

Prerequisite: second-year standing. A study of the society and institutions of Medieval Europe from the fall of Rome to the end of the 15th century. (Full course).

History N-332 (414). History of Early Modern Europe, 1400-1640

Prerequisite: History N-210. European history during the period of the Renaissance and the Reformation, including a study of the foundations of the political and economic systems of modern times. (Full course).

History N-333 (415). Enlightenment and Revolution, 1640-1848

Prerequisite: History N-210. European history in the age of the French Revolution, including a study of the scientific and industrial revolutions. (Full course).

History N-334 (416). Europe since 1848

Prerequisite: History N-210. A study of the internal development and

external relations of the most important states of western Europe since the middle of the 19th century. (Full course).

NOTE: — Students who have credit for History 016 may not take this course for credit.

History N-335 (443). Economic and Social History of Modern Europe

Prerequisite: History N-210 or Economics N-330. A study of the transformation of European society under the impact of the economic revolution of modern times. (Full course).

History N-336 (444). European Intellectual History

Prerequisite: History N-210. A study of the main currents of thought which have accompanied and influenced the development of modern Europe. (Full course).

History N-337 (413). History of European Diplomacy, 1870 to the Present

Prerequisite: History N-210 or Political Science N-385. An intensive study of the relations amongst the Great Powers of Europe from the Franco-Prussian War to the present. (Full course).

History N-341 (441). History of Russia

Prerequisite: History N-210. This course traces the origin of the Slavic-speaking peoples in Europe and the emergence of the Russian Empire. It discusses the ideology and history of bolshevism, and the period under communist government in the U.S.S.R. and among the Slavic peoples. (Full course).

History N-342 (445). Problems in Russian and Soviet History

Prerequisites: History N-210; N-341 or permission of the instructor. This course deals with specific problems in Tsarist and Soviet Russia. In the Pre-Revolutionary period attention is focussed on the emancipation of the peasantry, industrialization and the growth of the opposition parties. In the Soviet period emphasis is placed on the problem of economic growth, the changing pattern of Soviet Marxism and the nature of Soviet Foreign Policy. (Full course).

History N-345 (431). History of Britain since 1460

Prerequisite: History N-210; students honouring in English may register without prerequisite. A survey of the political, economic, and social development of modern England. Emphasis is placed on the evolution of parliamentary government in the early period, on the economic changes of the 18th and 19th centuries, and on the modern growth of democracy and the social service state. (Full course).

History N-351 (453). Colonial and Early National History of the United States

Prerequisite: History N-210 or N-251.
The period of colonization, the development of colonial institutions,

the war of independence and the emerging fabric of national life. (Full course).

History N-352 (457, 458). Jacksonian Era, Civil War, and Reconstruction in the United States

Prerequisite: History N-210 or N-251.

The development of American political, social and economic life in the 19th century, including sectionalism and expansion, the characteristics of plantation slavery as a social system, the coming of the Civil War, and the aims and outcome of Reconstruction. (Full course).

History N-354 (456). History of the United States Since 1900

Prerequisite: History N-210 or N-251. This course deals with domestic developments in the United States in the 20th century, including politics, intellectual life, industry and labour. (Full course).

History N-355 (455). Foreign Relations of the United States

Prerequisite: History N-210 or N-251. A study of United States foreign policy from the revolution to the present time, with emphasis on the period since 1890. (Full course).

History N-358 (452). History of Latin America

Prerequisite: History N-210, or enrollment in the major in Spanish. This course deals with the political, social and economic history of Latin America from the founding of the Spanish Empire to the present day. The development of the principal independent republics is studied, and attention is given to the growth of Inter-Americanism and to the place of Latin America in the modern world. (Full course).

History N-361 (461). History of South and Southeast Asia

Prerequisite: History N-261, or permission of the instructor. A study of the historical background of India, Pakistan, and the states of Southeast Asia. The course begins with a review of indigenous developments prior to the era of European expansion and proceeds to a more detailed examination of the political, social, and economic changes in modern times, concluding with a study of the problems faced by these countries since the achievement of independence. (Full course).

History N-362 (462). History of East Asia

Prerequisite: History N-261, or permission of the instructor. The course begins with a review of the traditional societies of China and Japan, and then examines the contrasting response in the two lands to the impact of Western imperialism in the 19th and 20th centuries, concluding with a study of developments since Second World War. (Full course).

History N-365 (481). History of Africa

Prerequisite: History N-210 on N-261. A survey of the early history of Africa followed by a more intensive study of the past century. Special emphasis is given to the changes in Africa resulting from contact with European civilization. (Full course).

History N-390 (472). Historical Method

Prerequisites: at least two credits in History, and written permission of the History Programme Advisor. A course in the application of modern historical criticism to a specific problem to be chosen in consultation with the instructor. (Full course).

History N-421 (421). Advanced Study in Canadian History

Prerequisite: A '300' level course in History, or permission of the Department. Seminar for honours and major students in a selected topic in the history of Canada. The emphasis will be on encouraging students to conduct historical investigation on their own under a professor's guidance. The specific content will vary from year to year depending on the instructor. (Full course).

History N-431 (434). Advanced Study in European History

Prerequisite: A '300' level course in History, or permission of the Department.

Seminar for honours and major students in a selected topic in the history of Europe. The emphasis will be on encouraging students to conduct historical investigation on their own under a professor's guidance. The specific content will vary from year to year depending on the instructor. (Full course).

History N-451 (451). Advanced Study in American History

Prerequisite: A '300' level course in History, or permission of the Department. Seminar for honours and major students in a selected topic in the history of the United States. The emphasis will be on encouraging students to conduct historical investigation on their own under a professor's guidance. The specific content will vary from year to year depending on the instructor. (Full course).

History N-461 (463). Advanced Study in Asian and African History

Prerequisite: A '300' level course in History, or permission of the Department. Seminar for honours and major students in a selected topic in the history of Asia and Africa. The emphasis will be on encouraging students to conduct historical investigation on their own under a professor's guidance. The specific content will vary from year to year depending on the instructor. (Full course).

History N-490 (474). Honours Essay

Prerequisite: Honours students only. A course in the application of modern historical criticism to a specific problem to be chosen in consultation with the instructor. (Full course).

History N-491 (473). Advanced Study in a Special Subject

Prerequisite: permission of the department. This course, intended primarily for honours or major students, affords an opportunity for more intensive examination of a particular historical theme than is possible in the normal lecture course. The specific subject will vary ac-

cording to the special interest of the professor offering the course in any given year. (Full course).

NOTE: — With permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. A student repeating History N-491 for credit will register under History N-492.

History N-492 (475). Advanced Study in a Special Subject

Prerequisite: Permission of the department. A student repeating History N-491 a second time registers for credit under History N-492. (Full course).

History-Sociology N-493 (493). History and Sociology

Prerequisites: An introductory course in History and in Sociology, and second or third year standing. An exploration of the relationships between historical and sociological approaches to the description and analysis of social conditions and social events, paying special attention to questions of methodology and conceptualization. (Full course).

NOTE: — This course may be counted as a credit in either History or Sociology.

Cognate Course

Classics N-221. History of Greece and Rome

POLITICAL SCIENCE

Harold M. Angell, *Associate Professor of Political Science, and Chairman of the Department.*
H.F. Quinn, *Professor of Political Science.*
Klaus J. Herrmann, *Associate Professor of Political Science.*
Lalita P. Singh, *Associate Professor of Political Science.*
Paris J. Arnopoulos, *Assistant Professor of Political Science.*
Robert A. Fraser, *Assistant Professor of Political Science.*
Horst Hutter, *Assistant Professor of Political Science.*
Harvey Shulman, *Visiting Assistant Professor of Political Science.*

Area I - Theory

Political Science N-311 - History of Political Theory
Political Science N-413 - Modern Political Ideologies
Political Science N-415 - Political Analysis

Area II - Comparative Politics

Political Science N-231 - Public Law
Political Science N-330 - Goverment and Politics of Canada
Political Science N-333 - Public Administration
Political Science N-334 - Urban Politics

Political Science N-352 - Government of Russia
Political Science N-354 - Government of United States
Political Science N-356 - Politics of Developing Countries: Asia
Political Science N-357 - Politics of Developing Countries: Latin America and the Caribbean
Political Science N-436 - Canadian Federalism
Political Science N-437 - Canadian External Affairs
Political Science N-451 - Political Systems of Western Europe
Political Science N-458 - Political Parties

Area III - International Relations

Political Science N-385 - Diplomacy and Foreign Policy
Political Science N-481 - International Law
Political Science N-483 - International Organization

Political Science N-210 (210). Concepts and Methods in Political Science

A course in political theory and methodology which will deal with some of the basic concepts of politics such as justice, liberty, equality, as well as the terminology, tools and techniques used in the study of political phenomena. (Full course).

Political Science N-231 (291). Public Law

This course is designed to provide students with an elementary knowledge of those institutions and problems of law of which they may reasonably be expected as citizens to have some understanding and appreciation. As a background to this study the meaning of law and its various divisions will be treated with a view to relating the legal order to present day problems of society. Topics will include the organization and functioning of the Federal and Provincial court systems including the appointment and selection of the Judiciary; the various stages in a lawsuit; a brief consideration of the Quebec civil law as it affects question of marriage and the more common contracts such as sale, lease and partnership. (Full course).

NOTE: — Students who have credit for Political Science 091 may not take this course for credit.

Political Science N-240 (211). Comparative Politics

A course in comparative politics with special emphasis on the dynamics of the political process. Going beyond constitutional and institutional procedures, this course will include the study of informal realities of decision-making. Most of the illustrative content is based on a comparative study of Canada, the United States, Great Britain, and France. (Full course).

NOTE: — A student who has credit for Political Science 011 may not take this course for credit.

Political Science N-270 (421). International Relations

A course in world affairs dealing with the political, economic, ideo-

logical, and cultural relations between states, and the main characteristics of the global power system. (Full course).

NOTE: – A student who has credit for Political Science 021 may not take this course for credit.

Political Science N-311 (431). History of Political Theory

Prerequisite: Political Science N-210 or 211 or 011 or Philosophy N-210 or 211 or 011. A critical study and analysis of the great thinkers on the problems of politics; Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, Hegel, Bentham, Mill and others. This course is designed to give a survey of systematic political reasoning from the classical period up to the middle of the 19th century in an endeavour to show the foundations of modern political thought. (Full course).

NOTE: – Students who have credit for Political Science 031 may not take this course for credit.

Political Science N-330 (251). Government and Politics of Canada

A study of the British North America Act and its judicial interpretation; the nature of Canadian federalism; the parliamentary system; nature and organization of political parties: provincial and municipal governments; law and the courts; foreign policy. (Full course).

NOTE: – A student who has credit for Political Science 051 may not take this course for credit.

Political Science N-333 (441). Problems of Public Administration

Prerequisite: Political Science N-240 or N-330. This course deals with the nature and function of the administrative branch of government. The student is introduced to such problems as the organization of government departments, the management of government corporations, budgeting, selection and training of personnel, maintenance of morale and discipline, relationship between legislature and administration, relationship between the administration and the public. (Full course).

Political Science N-334 (434). Urban Politics

Prerequisite: Political Science N-240 or Political Science N-330. A course in municipal government. The first part of the course will deal with local government in general and Canadian municipal government in particular. The second part will concentrate on the governments of metropolitan Montreal and their relations to each other and to the Provincial Government. (Half course).

Political Science N-352 (413). Government of Russia

Prerequisite: Political Science N-240. A study of the Russian system of government including legislative, executive, and judicial branches; the role of bureaucracy; the Communist Party. Comparisons with Western systems of government. (Half course).

Political Science N-354 (414). Government of United States

Prerequisite: Political Science N-240, or History N-251 or 251 or 051. A study of the American Constitution, federalism and the electoral system. (Half course).

Political Science N-356 (461). Politics of Developing Countries: Asia

Prerequisite: Political Science N-240. A comparative study of the origins and characteristics of the political systems of Asia with particular attention to India, Pakistan, China and Japan. (Full course).

NOTE: – Students who have credit for Political Science 415 before 1969-70 may not take this course for credit.

Political Science N-357 (462). Politics of Developing Countries: Latin America and the Caribbean

Prerequisite: Political Science N-240. A study of the political systems of the major countries of Latin America and the Caribbean area. In addition to governmental and party structures, there will be emphasis on the political role of groups which affect politics, such as the military, church, labour, and students, and the impact of nationalism. (Full course).

Political Science N-385 (385). Diplomacy and Foreign Policy

Prerequisite: Political Science N-270.

Foreign and defence policies of the Great Powers; diplomacy, military strategy and intelligence; methods and techniques of policy enforcement. (Full course).

Political Science N-413 (432). Modern Political Ideologies

Prerequisites: Political Science N-311. This course will cover political theories of the 19th and 20th centuries, dealing with such ideologies as Liberalism, Conservatism, Marxism, Democratic Socialism and Fascism. Readings include selections from the writings of Paine, Burke, Green, Marx, Lenin, Bernstein, Mussolini, Hitler, Mao Tse-tung, and others. (Full course).

Political Science N-415 (433). Political Analysis

Prerequisites: Political Science N-210 or 211 or 011 and one '300' level course in Political Science. A study of the contemporary subject matter and methods of Political Science. The course deals with: 1) fundamental concepts, principles, institutions, and processes of politics; 2) methods, techniques, instruments and data of social sciences; 3) present theories, such as functionalism, behaviouralism, formalism; 4) political ideals and their impact on policy-making and social control. In addition to the theoritical analysis, critique, and evaluation of the latest thinking in Political Science, the student will participate in the testing and practical application of political knowledge. Seminar and laboratory periods. (Full course).

Political Science N-436 (451). Canadian Federalism

Prerequisite: Political Science N-330. A critical and analytical study of the theory of federal government and its application to the nature, principles and techniques of federalism in Canada. The reaction of the Canadian federal system to the demands of cultural dualism and regional pressures. Some attention will also be given to the problems of provincial governments in their pressure on and adjustment to Dominion-Provincial relations. (Half course).

Political Science N-437 (452). Canadian External Affairs

Prerequisite: Political Science N-330 or N-270. This course will study Canada's position in the world. The presentation will include an outline of the diplomatic history of Canada, as well as an analysis of its foreign and defence policies. Emphasis will be given to the decision-making process by which policy is formulated and executed, with particular reference to Canadian relations vis-a-vis the Americans; the Commonwealth; and the United Nations. (Half course).

Political Science N-451 (412). Political Systems of Western Europe

Prerequisite: Political Science N-240. Mainly a comparative study of the political systems of Britain, France and Western Germany, but some consideration will be given to the smaller states in Western Europe, such as Switzerland and the Scandinavian countries. (Full course).

NOTE: – Students who have credit for either Political Science 416 or 417 before 1969-70 may not take this course for credit.

Political Science N-458 (411). Political Parties

Prerequisite: Political Science N-240. A study of the history, ideology, organization and electoral geography of political parties in the United States, England, France, Germany, and some of the smaller countries in Western Europe. The course will also deal with the different types of party systems, the nature and function of parties in the democratic process, the nature of political elites, pressure groups, the organization of elections, and political propaganda. Lectures, discussions and term paper. (Full course).

Political Science N-481 (423). International Law

Prerequisite: Political Science N-270. This course will survey the theory and practice of International Law from its traditional classical origins to the modern contemporary developments with emphasis on the political and interstate relations aspects. The first half of the course will include basic concepts of the nature of law, state sovereignty, treaties, Nationality, jurisdiction, recognition, arbitration, and cases of international adjudication. The second half will develop present trends in international legal order; control of world conflicts, codification of law, settlement of disputes by the International Court of Justice. Human Rights, and the relation of law to power politics. (Full course).

Political Science N-483 (422). International Organization

Prerequisite: Political Science N-270. The historical development of the concepts of international organization with special emphasis upon the 19th and 20th centuries. The League of Nations and the United Nations with its specialized agencies will be examined carefully. In addition, certain other international bodies of a regional or specialized nature such as NATO and GATT will be considered. (Full course).

NOTE: – Only one full credit will be given from Political Science 221 and 422.

Political Science N-491 (491). Honours Seminar

Prerequisite: open to third-year honours students, or by permission of the department. Students will choose a topic from one of the various fields in political science. Each student must prepare and submit an appropriate research paper, under the supervision of the department. (Full course).

PSYCHOLOGY

Jane Stewart, *Professor of Psychology, and Chairman of the Department.*
G. M. Mahoney, *Professor of Psychology.*
Joseph P. Zweig, *Professor of Psychology.*
Gabriel R. Breton, *Associate Professor of Psychology.*
Dolores Gold, *Associate Professor of Psychology.*
A. Harold Goldsman, *Associate Professor of Psychology.*
William R. Hooper, *Associate Professor of Psychology.*
Tannis Y. Maag, *Associate Professor of Psychology.*
Erat S. Nayar, *Associate Professor of Psychology.*
David H. Andres, *Assistant Professor of Psychology.*
June S. Chaikelson, *Assistant Professor of Psychology.*
Thomas Gray, *Assistant Professor of Psychology.*
Anthony Hilton, *Assistant Professor of Psychology.*
George R. Marshall, *Assistant Professor of Psychology.*
S. R. Munoz, *Assistant Professor of Psychology.*
Campbell W. Perry, *Assistant Professor of Psychology.*
Beverly J. Sanders, *Assistant Professor of Psychology.*
Nancy D. Taylor, *Assistant Professor of Psychology.*
Roy A. Wise, *Assistant Professor of Psychology.*
Edgar B. Zurif, *Assistant Professor of Psychology.*
William Brender, *Lecturer in Psychology.*
Karen S. Woodsmall, *Visiting Lecturer in Psychology.*

NOTE: – Courses entitled "Selected Problems in. . ." are intended for students majoring in fields other than Psychology. A student may register for only one of these courses per term.

Psychology N-211 (211). Introductory Psychology

The purpose of this course is the development of an adequate understanding of known principles of behaviour and experience. The work includes a study of the sense organs and nervous system, perception, learning, memory, motivation and the basic needs, emotional reactions, personality development, adjustment and integration, abnormal personality, mental abilities and aptitudes, social aspects of behaviour and the applications of psychology. (Full course).

NOTE: - Students who have credit for CEGEP Psychology 101 and 201, or 011 may not take this course for credit.

Psychology N-212. Selected Problems in Learning and Motivation A

Prerequisite: Psychology N-211 or 011, or CEGEP Psychology 101 and 201, or second year standing.

This course will deal with a selected problem in Learning and Motivation to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. Possible topics are: operant behaviour; memory; teaching and learning; maternal behaviour; aggression; sleep. (Half course).

NOTE: – Students who have credit for Psychology 421, or N-421, or 422, or N-422 may not take this course for credit.

Psychology N-213. Selected Problems in Learning and Motivation B

Prerequisite: Psychology N-211 or 011, or CEGEP Psychology 101 and 201, or second year standing.

This course will deal with a selected problem in Learning and Motivation to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. Possible topics are: operant behaviour; memory; teaching and learning; maternal behaviour; aggression; sleep. (Half course).

NOTE: – Students who have credit for Psychology 421, or N-421, or 422, or N-422 may not take this course for credit.

Psychology N-214 (251). Selected Problems in Individual Differences A

Prerequisite: Psychology N-211 or 011, or CEGEP Psychology 101 and 201, or second year standing.

This course will deal with a selected problem in Individual Differences to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. Possible topics are: creativity; intelligence; self-awareness and self-esteem; leadership. (Half course).

NOTE: – Students who have credit for Psychology 451, or 452, or N-452 may not take this course for credit.

Psychology N-215 (252). Selected Problems in Individual Differences B

Prerequisite: Psychology N-211 or 011, or CEGEP Psychology 101 and 201, or second year standing. This course will deal with a selected problem in Individual Differences to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. Possible topics are: creativity; intelligence; self-awareness and self-esteem; leadership. (Half course).

NOTE: – Students who have credit for Psychology 451, or 452, or N-452 may not take this course for credit.

Psychology N-241 (241). Statistical Methods in Psychology A

Prerequisite: Any two CEGEP half courses in mathematics. A basic course in the fundamentals of statistics for psychology and education. Topics include: the construction of frequency distributions; graphic presentation; measures of central tendency and dispersion; correlation and

linear regression; elementary probability theory; the binomial distribution and the normal curve; sampling or the reliability of statistics and tests of significance; Chi square; analysis of variance; miscellaneous non-parametric techniques. Lectures and laboratory. (Full course).

NOTE: – Only one full credit will be given from among Economics N-471, N-275, Geography N-262, Mathematics 241, Quantitative Methods N-243 and N-244, Statistics 242, Sociology N-241, Psychology N-241 and N-242.

Psychology N-242 (242). Statistical Methods in Psychology B

Prerequisite: one half credit in 'Statistics and Probability' at the CEGEP level, or equivalent. A course in the fundamentals of statistical inference for psychology. (Full course).

NOTE: - Only one credit will be given from among Economics N-275, Economics N-471, Geography N-262, Mathematics 241, Quantitative Methods N-243 and N-244, Statistics 242, Sociology N-241, Psychology N-241, and Psychology N-242.

Psychology N-271 (271). Experimental Psychology 1A

Prerequisite: Psychology N-211 or 011, or CEGEP Psychology 101 and 201. An examination of experimental method in psychology with an introduction to statistical techniques (primarily descriptive statistics) and laboratory experience in methodology appropriate to all areas of psychology. Lectures and laboratory. (Full course).

NOTE: – Students who have credit for Psychology 273 may not take this course for credit.

Psychology N-273 (273). Experimental Psychology 1B

Prerequisites: Psychology N-211 or 011, or CEGEP Psychology 101 and 201; Psychology N-241 or N-242 previously or concurrently, and permission of the Department. An examination of experimental method in psychology, with laboratory experience in techniques appropriate to important problem areas. Lectures and laboratory. (Full course).

NOTE: – Students who have credit for Psychology 271 may not take this course for credit.

Psychology N-275 (275). Directed Study and Research on a Selected Topic

Prerequisite: Psychology N-271 or N-273, and written permission from the Department Chairman and from the supervisor of the research. Under the supervision of a member of the Psychology Department, the student is to carry out and report in writing an independent research project. The area of study must be decided upon through consultation with a faculty member prior to registration. No lectures; consultation and laboratory only. (Half course).

Psychology N-302 (436). Selected Problems in Development A

Prerequisite: Second year standing. This course will deal with a selected problem in Development to be announced each year. The course

will be designed to allow a student to explore a problem in considerable depth starting from first principles. Possible topics are: perception of spoken and written language; developmental language disability; learning in infancy and early childhood; critical periods in early development. (Half course).

NOTE: – Student who have credit for Psychology 437 or N-438 may not take this course for credit.

Psychology N-303 (437). Selected Problems in Development B

Prerequisite: Second year standing. This course will deal with a selected problem in Development to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. Possible topics are: perception of spoken and written language; developmental language disability; learning in infancy and early childhood; critical periods in early development. (Half course).

NOTE: – Student who have credit for Psychology 437 or N-438 may not take this course for credit.

Psychology N-304 (440). Selected Problems in Social Psychology A

Prerequisite: Second year standing. This course will deal with a selected problem in Social Psychology to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. Possible topics are: socialization of the child; social motives; interpersonal attraction; values, beliefs and attitude change; prescriptions for future man. (Half course).

NOTE: – Students who have credit for Psychology 441 or N-442 may not take this course for credit.

Psychology N-305 (441). Selected Problems in Social Psychology B

Prerequisite: Second year standing. This course will deal with a selected problem in Social Psychology to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. Possible topics are: socialization of the child; social motives; interpersonal attraction; values, beliefs and attitude change; prescriptions for future man. (Half course).

NOTE: – Students who have credit for Psychology 441, or N-442 may not take this course for credit.

Psychology N-402 (450). Selected Problems in the Application of Psychology A

Prerequisite: Third year standing. This course will deal with a selected problem in the application of Psychology to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. Possible topics are: personnel selection technique; rehabilitation, psychological foundations; criminal behaviour; behaviour disorders; sexual differentiation; drugs and behaviour. (Half course).

Psychology N-403 (451). Selected Problems in the Application of Psychology B

Prerequisite: Third year standing. This course will deal with a selected problem in the application of Psychology to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. Possible topics are: personnel selection technique; rehabilitation, psychological foundations; criminal behaviour; behaviour disorders; sexual differentiation; drugs and behaviour. (Half course).

Psychology N-404. Selected Problems in Psychology A

Prerequisite: Third year standing. This course will deal with a selected problem in Psychology to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. The particular topic discussed will vary from year to year. (Half course).

Psychology N-405. Selected Problems in Psychology B

Prerequisite: Third year standing. This course will deal with a selected problem in Psychology to be announced each year. The course will be designed to allow the student to explore a problem in considerable depth starting from first principles. The particular topic discussed will vary from year to year. (Half course).

Psychology N-412 (412). Modern Psychology in Historical Perspective

Prerequisite: Psychology N-211 or 011, or CEGEP Psychology 101 and 201. This course consists of an outline of the history of psychology from early times up to the recent past. The work includes the ancient and medieval background of psychology; the early contributions from the fields of physics and physiology; psychophysics; and historical background of the various schools of psychological thought from the late nineteenth century to the present day. (Full course).

Psychology N-413 (413). Contemporary Problems in Psychology

Prerequisite: Open to third year honours students or by permission of the Department. An intensive treatment of current major problem areas in psychology. (Full course).

Psychology N-421 (421). Learning

Prerequisite: Psychology N-271 or 273. A study of empirical findings and theoretical issues in the fields of animal and human learning. Topics covered include conditioning, discrimination learning, transfer, verbal learning, and classic and contemporary theoretical issues. (Full course).

Psychology N-422 (422). Motivation

Prerequisites: Psychology N-271 or N-273. A study of empirical find-

ings and theoretical issues in the fields of animal and human motivation. Topics covered include physiological bases of motivation, instinct, drive, frustration and conflict, emotions, exploratory behaviour; and classic and contemporary theoretical issues. (Full course).

Psychology N-428 (427). Measurement in Psychology

Prerequisite: Psychology N-271 or N-273. A consideration of the general problems of measurement in psychology, including instrumentation and scaling procedures for measurement of psychological and physiological processes in the areas of sensation and perception, learning, social psychology and the psychology of individual differences. The use of various psychometric techniques in measurement of achievement, aptitude and personality will be appraised and questions of reliability and validity of tests will be discussed. (Full course).

Psychology N-432 (432). Perception

Prerequisite: Psychology N-271 or N-273. The physiological bases of sensation and perception and their relation to the basic psychological phenomena encountered in vision, audition, and the other senses will be studied. Phenomena such as pattern perception and the perception of distance and movement will be analysed. The effects of learning, motivation, and social factors upon perceptual processing will also be examined. (Full course).

NOTE: – Students who have credit for Psychology 431 may not take this course for credit.

Psychology N-434 (434). Cognitive Processes

Prerequisite: Psychology N-271 or N-273. An investigation of the complex processes intervening between the stimulus and the response. Various attempts to explain them in terms of the stimulus by perception theorists and in terms of the response by learning theorists, will be examined. Other logical approaches will be discussed and exemplified, e.g. the developmental approach by the work of Piaget, and the psychometric approach by the work of Guilford. (Full course).

NOTE: – Students who have credit for Psychology 433, or for Psychology 431 after 1968-69 may not take this course for credit.

Psychology N-438 (438). Developmental Psychology

Prerequisite: Psychology N-271 or N-273. An experimental and comparative approach to human development from conception to old age, with emphasis on the period from birth to adolescence. Topics discussed will include language, social behaviour, intelligence, learning and perception. (Full course).

NOTE: – Students who have credit for Psychology 231 or 437 may not take this course for credit.

Psychology N-442 (442). Social Psychology

Prerequisite: Psychology N-271 or N-273. A study of social factors in the behaviour and attitudes of the individual and of groups, including a survey of the psychology of bias, prejudice, stereotypes, propaganda, opinion, individual and group morale, group dynamics and sociometry. (Full course).

NOTE: – Students who have credit for Psychology 441 may not take this course for credit.

Psychology N-452 (452). Personality

Prerequisites: Psychology N-271 or N-273. The course surveys the various theories of personality and relationships between personality and behaviour. Individual differences in personality will be studied along with related factors such as age, sex, education, genetic and other physical factors, socio-economic level and other cultural factors. A brief survey and review of basic statistical concepts will be included along with a short introduction to personality measurement. (Full course).

NOTE: – Students who have credit for Psychology 451 may not take this course for credit.

Psychology N-454 (454). Behaviour Disorders

Prerequisite: Psychology N-271 or N-273. A study of the etiology and description of behaviour and psychological disorders, including the psychoneuroses, psychoses and psychosomatic conditions. (Full course).

Psychology N-461 (461). Physiological Psychology

Prerequisites: Psychology N-271 or N-273 or one full course in Physiology or General Biology at the CEGEP level or equivalent. This course attempts to relate neuro-physiology to such psychological problems as learning, attention, and emotion. The topics treated include excitation and conduction in the neuron; synaptic mechanism; sensory and motor systems, the internal environment; the electrical activity of the brain. Emphasis is given to brain damage studies in animals and man, and the problem of localization of function in the nervous system. (Full course).

Psychology N-462 (462). Comparative Psychology

Prerequisite: Psychology N-271 or N-273 or one full credit in Biology at the CEGEP level, or equivalent. A study of behaviour from a comparative viewpoint. Topics of study will include evolutionary changes in brain and behaviour, behaviour genetics and specific aspects of behaviour such as sensory capacities, motivation, emotion, learning, cognitive abilities and social behaviour. (Full course).

Psychology N-471 (471). Experimental Psychology II

Prerequisite: Psychology N-241 or N-242; N-271 or N-273, and permission of the Department. This course will deal with experimental procedures and related techniques in the study of perception, learning, motivation and thinking. Emphasis will be placed on critical analysis of experiments and the evaluation of theoretical ideas in the light of their results. Students will be required to prepare reports of the literature on specific topics, and to arrange and conduct demonstration experiments. Lectures and laboratory. (Full course).

Psychology N-472 (472). Advanced Experimental Problems

Prerequisite: Open to third year honours students, or by permission of the Department. Supervised investigation of special problems. Each student will be required to conduct an experimental study and to submit an appropriate research paper of the study, under the supervision of the department. Lectures and laboratory. (Full course).

Psychology N-481 (481). Psychology of Work Organizations

Prerequisites: Psychology N-271 or N-273; and permission of the Department. The scientific study of human behaviour as it occurs in business and industry; an examination of the roles of workers, managers, and consumers, and studies of the social psychology of organizations. (Full course).

NOTE: – Students who have credit for Psychology 221 may not take this course for credit.

Psychology N-482 (482). Psychology of Human Learning in the Classroom

Prerequisites: Psychology N-211 or 011, or CEGEP Psychology 101 and 201; Psychology N-271 or N-273 or enrolment in the Art Education major; and permission of the Department. A systematic examination of psychological principles and research reports which contribute to an understanding of human learning in the school. (Full course).

NOTE: – Students who have credit for Psychology 223 may not take this course for credit.

Psychology N-491 (491). Special Seminar on Selected Topics in Psychology

Prerequisite: Third year honours and major students with permission of the Department. Subject matter will differ from term to term and from year to year to take advantage of the special interests of the seminar leader. The course will provide opportunities to senior students for discussion and advanced study. (Half course).

NOTE: – With the permission of the Department a student may take this course twice for credit, providing that a different subject is dealt with the second time. A student repeating Psychology N-491 for credit will register under Psychology N-493.

Psychology N-492 (492). Special Seminar on Selected Topics in Psychology

Prerequisite: Third year honours and major students with permission of the Department. Subject matter will differ from term to term and from year to year to take advantage of the special interests of the seminar leader. The course will provide opportunities to senior students for discussion and advanced study. (Half course).

NOTE: – With the permission of the Department a student may take this course twice for credit, providing that a different subject is dealt with the second time. A student repeating Psychology N-492 for credit will register under Psychology N-494.

Psychology N-493 (493). Special Seminar on Selected Topics in Psychology

Prerequisite: Permission of the Department. A student repeating Psychology N-491 for a second time register for credit under Psychology N-493. (Half course).

Psychology N-494 (494). Special Seminar on Selected Topics in Psychology

Prerequisite: Permission of the Department. A student repeating Psychology N-492 for a second time registers for credit under Psychology N-494. (Half course).

SOCIOLOGY AND ANTHROPOLOGY

John D. Jackson, *Associate Professor of Sociology, and Chairman of the Department.*
Hubert Guindon, *Professor of Sociology.*
Harold H. Potter, *Professor of Sociology.*
Charles S. Brant, *Professor of Anthropology.*
Szymon Chodak, *Visiting Professor of Sociology.*
H. Taylor Buckner, *Associate Professor of Sociology.*
Kurt Jonassohn, *Associate Professor of Sociology.*
Anatole N. Klein, *Associate Professor of Anthropology.*
Joseph C. Mouledoux, *Associate Professor of Sociology.*
Solomon J. Rawin, *Associate Professor of Sociology.*
Joseph Smucker, *Associate Professor of Sociology.*
Kenneth C. Dempsey, *Visiting Associate Professor of Sociology.*
John P. Drysdale, *Visiting Associate Professor of Sociology.*
Shirley I. Ciffin, *Assistant Professor of Sociology.*
Gordon Laing, *Assistant Professor of Sociology.*
Anthony Synnott, *Lecturer in Sociology.*
Dennis Forsythe, *Lecturer in Sociology.*
Lai H. Cheong, *Sessional Lecturer in Sociology.*

Area I - Basic Methods, Epistemology and Methodology

New Course Number	Title
Sociology N-241	Statistics
Sociology N-410	Sociological Inquiry
Sociology N-411	Research Techniques
Anthropology N-413	Problems in Anthropological Method
Anthropology N-494 - N-498	Special Seminars
Sociology N-494 - N-499	Special Seminars

Area II - Social and Symbolic Nature of Man

Sociology N-420	Self and Society
Sociology N-421	Sociology of Deviance
Socio?ogy N-422	Sociology of Knowledge
Sociology N-424	Sociology of Religion
Anthropology N-423	Cultural Anthropology
Anthropology N-425	Religious Systems

Anthropology N-494 - N-498   Special Seminars
Sociology N-494 - N-499   Special Seminars

Area III - Theory

Sociology N-430	History of Social Theory
Sociology N-431	Sociological Theory
Sociology N-432	Social Organization
Sociology N-433	Selected problems in Sociological Theory
Anthropology N-434	Problems in History & Theory of Anthropology
Anthropology N-494 - N-498	Special Seminars
Sociology N-494 - N-499	Special Seminars

Area IV - Special Studies

Sociology N-440	Community Studies
Sociology N-441	Sociology of Urban Regions
Sociology N-442	The Family
Sociology N-443	Collective Behaviour & Social Movements
Sociology N-444	Intergroup relations
Sociology N-445	Intergroup relations in Canada
Sociology N-446	Social Stratification
Sociology N-447	Political Sociology
Sociology N-448	Demography
Sociology N-449	Area Studies in Social Change
Sociology N-450	Seminar in Urban Studies
Sociology N-451	Sociology of Education
Sociology N-452	Sociology of Law
Sociology N-453	Area Studies in Demography
Sociology N-454	Industrial Sociology
Sociology N-455	Comparative Social Systems
Sociology N-456	History and Sociology
Sociology N-481	Honours Seminar
Anthropology N-458	Peasantry: Culture of Peasant Societies
Anthropology N-460	Comparative Social Structure and Political Anthropology
Anthropology N-461	State Formation
Anthropology N-462	American Indian
Anthropology N-494 - N-498	Special Seminars
Sociology N-494 - N-499	Special Seminars

SOCIOLOGY

Sociology N-210 (212). Introduction: Social Organization

The purpose of this course is to acquaint the student with the diversity of ways of living and forms of social organization in different geographical areas and historical contexts. The content of the course emphasizes the traditional agrarian society and introduces some of the major processes involved in change from traditional to modern types. Readings include a series of basic monographs. (Full course).

NOTE: — A student who has a credit for Sociology 011 or 211 may not take this course for credit.

Sociology N-241 (241). Statistics

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210 and high school Algebra. An introductory course in descriptive and analytical statistical methods for students of sociology. Lectures and laboratory. (Half course).

NOTE: — Only one full credit will be given from among Economics N-471, N-275, Geography N-262, Mathematics 241, Quantitative Methods 243 and 244, Statistics 242, Sociology N-241, Psychology N-241 and N-242.

Sociology N-410 (401). Sociological Inquiry

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. A study of the logic of sociological inquiry with a focus upon problems of conceptualization, assumptions underlying tests of validity and reliability, and the use of different statistical models in making assertions about social behaviour. (Full course).

Sociology N-411 (411). Research Techniques

Prerequisites: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212, or N-210 and N-241. It is strongly recommended that the student take Sociology N-241 prior to, or concurrently with Sociology N-411. This course deals with the design of research, the methods of data collection, and the techniques of analysis. A research project will be designed and carried out by the students. The emphasis will be on training for the critical reading of published research materials, as well as on training for graduate study. Lectures and Laboratory. (Full course).

Sociology N-420 (425). Self and Society

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. A consideration of theories of symbolic interaction that have influenced sociological analysis. Motivation is viewed in terms of the interplay between actors and social structures, and this approach is illustrated by reference to selected empirical studies. (Full course).

Sociology N-421 (433). Sociology of Deviance

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. The nature of deviant or marginal behaviour: legal and non-legal forms. Socialization to deviance; institutionalization of deviance; social control of deviance, structure and culture of deviance. Theories of deviant behaviour and their sociological, legal and practical implications. (Full course).

Sociology N-422 (495). Sociology of Knowledge

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Studies of the effect of myths, ideologies, and utopias on social structure, and of the social structure as the determinant of conceptions and problem definitions under particular historical conditions; the contributions of thinkers such as Plato, Ibn Khaldoun, M. Scheler, M. Weber, K. Marx, K. Mannheim, and R. Merton. (Full course).

Sociology N-424 (432). Sociology of Religion

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. The major focus is on the institutionalization of religion. The interpretation of religious phenomena is sociological and not philosophical or theological, and stays within the tradition of historical and phenomenological studies of religion (Otto, Van der Leeuw, Eliade). Emphasis is placed on the approaches of sociology of knowledge and comparative sociology (Weber, Durkheim, Berger, Luckmann). (Full course).

Sociology N-430 (423). History of Social Theory

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Introduction to major theorists whose main works will be read and discussed. Emphasis will be on the classics up to about 1920, especially Comte, Spencer, Marx, Ward, Sumner, Mead, M. Weber, Simmel, Durkheim and Pareto. Lectures and seminar. (Full course).

Sociology N-431 (424). Sociological Theory

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. The nature and principles of theoretical construction. Analysis of specific theories. Classical theories such as those of Durkheim, Simmel and M. Weber are included, but the emphasis is on contemporary theorists, especially Parsons, Merton, Homans, Coser and Goffman. Lectures and seminar. (Full course).

Sociology N-432 (428). Social Organization

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. A study of different methods of coordinating human action in social group operations under different environmental conditions. Particular focus is on role systems connected with multigroup structures. The course begins with the analysis of roles and groups, examines the process of group formation and ends with a comparative study of diverse and altering structures in major institutional areas of organization. (Full course).

Sociology N-433 (437). Selected Problems in Sociological Theory

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210 and permission of the Department. Additional prerequisites may be added according to subject matter.

This course is designed to provide students with an opportunity to study selected theoretical problems and/or theorists. Subject matter will vary according to the interests of students and faculty. (Full course).

Sociology N-440 (404). Community Studies

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Based upon selected community studies, this course will focus upon an interpretation of the findings of these studies within the larger context of urbanization and industrialization with special emphasis given to the methodology of community studies. (Half course).

Sociology N-441 (441). Sociology of Urban Regions

Prerequisite: One credit in Sociology at CEGEP level, or Sociology

011 or 211 or 212 or N-210. The physical and social characteristics of urban communities are studied with special attention paid to ecological patterns and ecological process. Forms of adjustment, co-operation and control are included in these studies. (Half course).

Sociology N-442 (442). The Family

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Types of mate selection and types of marriage. Theories about the history of the human family. Models of family structure and family interaction. Empirical studies. Illegitimacy, family planning, old age, divorce, and psychodrama are treated. (Full course).

Sociology N-443 (422). Collective Behaviour and Social Movements

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Characteristics of collective behaviour, its origin, development, and relationship to formal social structures. Methods of study and theories to explain the observed processes. The nature and function of social movements; their life histories and their relationship to the larger society. Specific case studies of religious, racial, and political movements. (Full course).

Sociology N-444 (447). Intergroup Relations

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. A study of the manner in which racial and ethnic groups are redefined by being renamed in the course of history; an analysis of the social, economic, and political relations between groups; analysis of consensus, interdependence, alienation, and conflict; emphasis is historical and comparative. (Half course).

Sociology N-445 (443). Intergroup Relations in Canada

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Concepts of race, ethnicity, and assimilation are examined. Includes studies of immigration practices, ethnicity and social status, and specific intergroup relations in Canada. (Half course).

Sociology N-446 (444). Social Stratification

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Systems of social differentiation are analysed. Theories about their origins and consequences, and about degrees and types of mobility related to them, are discussed. The theories are applied to Canada and to the United States as well as to other societies. (Full course).

Sociology N-447 (427). Political Sociology

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. The social and normative structures of political insitutions, including political parties; the relationship between political institutions and religious and economic insitutions; the rise and fall of political ideologies, systems and institutions; the making and communications of policies, the rejuvenation of elites. Political attitudes and behaviour are analysed, as well as political socialization, interest, and involvement). (Full course).

Sociology N-448 (461). Demography

Prerequisite: One credit in Sociology at CEGEP level or Sociology 011 or 211 or 212 or N-210, or an introductory course in a Social Science. This course consists of a brief survey of population theory and an introduction to the techniques of population analysis. It will cover the size, distribution, and composition of the population; changes in these characteristics; the relationship between population trends and social and economic conditions, with special reference to recent trends. (Half course).

Sociology N-449 (464). Area Studies in Social Change

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Intensive study in one specific area of the subject matter which includes : a study of the implications of the passing of traditional society and the development of large-scale organisation; the shifting distributions of population, material resources, and social power in connection with the development of expanding of diversifying institutional frameworks; colonisation, nationalism, modernisation, industrialization and urbanisation – these are examined in organisational perspective as group-making process. (Half course).

Sociology N-450 (496). Seminar in Urban and Metropolitan Studies

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Intensive study of a few theories and selected monographs dealing with aspects of urbanization. (Full course).

Sociology N-451 (448). Sociology of Education

Prerequisite: One credit in Sociology at CEGEP level or Sociology 011 or 211 or 212 or N-210. The social organization of educational activities. The role of educational institutions in socialization, social control and technology. Education and stratification, mobility and social change. (Full course).

NOTE: – Students taking this course for credit cannot register for Education N-421 for credit.

Sociology N-452 (449). Sociology of Law

Prerequisite: One credit in Sociology at CEGEP level or Sociology 011 or 211 or 212 or N-210. A study of law as an institutionalized system of social control in diverse and changing structures of society. Examined are the problems of definition and validation, enforcement and execution of the law in various spheres of application in connection with different systems of stratified organization. Special attention is given to legal organization in contemporary society. (Full course).

Sociology N-453 (462). Area Studies in Demography

Prerequisite: One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Sociology N-448. Demographic trends of Canada and the United States; interregional migration; demographic features of other areas for which data is available. Special emphasis on the relationship between economic development and demographic characteristics will be given where possible. (Half course).

Sociology N-454 (465). Industrial Sociology

Prerequisite: One credit in Sociology at CEGEP level or Sociology 011 or 211 or 212 or N-210. This course presents a sociological approach to the study of work in modern industrialized society. It deals with occupations and professions, some characteristics of the labour force and the labour market, and an analysis of social interaction and its effects in occupationals groups and work groups. (Full course).

NOTE: – Students who have credit for Sociology 243 may not take this course for credit.

Sociology N-455 (497). Comparative Social Systems

Prerequisite: One credit in Sociology at CEGEP level or Sociology 011 tor 211 or 212 or N-210. Techniques of comparative analysis. Examination of research in the areas of development, modernization, and social change. Relationship between societies at different levels or development. Special attention is given to the testing of various theories for their explanatory value in actual research. (Full course).

History-Sociology N-456 (493). History and Sociology

Prerequisites: an introductory course in History and in Sociology, and second or third year standing. An exploration of the relationships between historical and sociological approaches to the description and analysis of social conditions and social events, paying special attention to questions of methodology and conceptualization. (Full course).

NOTE: – This course may be counted as a credit in either History or Sociology.

Sociology N-481 (491). Honours Seminar

Prerequisite: One credit in Sociology at CEGEP level or Sociology 011 the Department. Students engage in a critical study of major sociological work, according to their interests. Before the end of the academic year a research paper must be completed and accepted by the department. (Full course).

Sociology N-494 (486). Special Seminar A

Prerequisite: One credit in Sociology at CEGEP level or Sociology 011 or 211 or 212 or N-210. Additional prerequisites may be added according to subject matter. Registration by permission of department. Subject matter will vary from year to year to take advantage of the special interests of the seminar leader. This course will provide opportunities to senior students for discussion and advanced study. (Full course).

NOTE: – With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. A student repeating Sociology N-494 for credit will register under Sociology N-496.

Sociology N-495 (487). Special Seminar B

Prerequisite: One credit in Sociology at CEGEP level or Sociology 011 or 211 or 212 or N-210. Additional prerequisites may be added according to subject matter. Registration by permission of department. Subject

matter will vary from year to year to take advantage of the special interests of the seminar leader. This course will provide opportunities to senior students for discussion and advanced study. (Full course).

NOTE : — With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time for credit under Sociology N-496.

Sociology N-496 (408). Special Seminar

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Additional prerequisites may be added according to subject matter. Registration by permission of department.

Subject matter will vary from year to year to take advantage of the special interests of the seminar leader. This course will provide opportunities to senior students for discussion and advanced study. (Full course).

NOTE : — A student may take Sociology N-494 or N-495 twice for credit, provided that a different subject is dealt with the second time. He will register the second time for credit under Sociology N-496.

Sociology N-497 (488). Special Seminar C

Prerequisite: One credit in Sociology at CEGEP level or Sociology 011 or 211 or 212 or N-210. Additional prerequisites may be added according to subject matter. Registration by permission of department. Subject matter will vary from year to year to take advantage of the special interests of the seminar leader. This course will provide opportunities to senior students for discussion and advanced study. (Half course).

NOTE: — With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time for credit under Sociology N-499.

Sociology N-498 (489). Special Seminar D

Prerequisite: One credit in Sociology at the CEGEP level, or Sociology 011 or 211 or 212 or N-210. Additional prerequisites may be added according to subject matter. Registration by permission of department. Subject matter will vary from year to year to take advantage of the special interests of the seminar leader. This course will provide opportunities to senior students for discussion and advanced study. (Half course).

NOTE : — With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time for credit under Sociology N-499.

Sociology N-499 (409). Special Seminar

Prerequisite : One credit in Sociology at CEGEP level, or Sociology 011 or 211 or 212 or N-210. Additional prerequisites may be added according to subject matter. Registration by permission of department. Subject matter will vary from year to year to take advantage of the special interests of the seminar leader. This course will provide opportunities

to senior students for discussion and advanced study. (Half course).

NOTE: - A student may take Sociology N-497 or N-498 twice for credit, provided that a different subject is dealt with the second time. He will register the second time for credit under Sociology N-499.

ANTHROPOLOGY

Anthropology N-211 (211). Introduction to Anthropology

This course deals with the evolution of man and his culture during pre-history, the differentiation of races, family and kinship structures in simple and complex societies, and the religious beliefs and practices of ancient and modern primitives in selected parts of the world. (Full course).

NOTE: — Only one full credit will be given students who pass Anthropology 011 or 211 and Sociology 231.

NOTE: — Students who have credit for Anthropology 011 may not take this course for credit.

Anthropology N-413 (441). Problems in Anthropological Method

Prerequisites: Two credits in Anthropology. Selected problems in Methodology, chosen by the instructor for advanced work with students. (Half course),

Anthropology N-423 (432). Cultural Anthropology

Prerequisite: One CEGEP credit in Anthropology, or Anthropology 001 or 211 or N-211. Major theories of culture; survey of principal culture types and their distribution; analysis of relations between various aspects of culture such as technology, economy, family, and religion, with special attention to non-industrial societies; discussion of ethnological problems. (Full course).

Anthropology N-425 (434). Religious Systems

Prerequisite: One credit in Anthropology at CEGEP level or Anthropology 011 or 211 or Religion N-213. A comparative examination of various theories and outlooks on religious institutions, belief systems, ceremony and ritual in diverse contexts selected from primitive, peasant and industrial cultures, and including selections from previous historical periods. (Full course).

Anthropology N-434 (451). Problems in the History and Theory of Anthropology

Prerequisites: Two credits in Anthropology. Selected problems from the History of Anthropology chosen by the instructor, for advanced work with students. (Full course).

Anthropology N-458 (435). Peasantry; the Culture of Peasant Societies

Prerequisite: One credit in Anthropology at the CEGEP level, or Anthropology 011 or 211 or N-211, or Economics N-440. Analysis of social, economic and political organization of selected peasant societies in both new and Old World environments. Integration with selected problems of ideological, religious and artistic development within these cultures. (Half course).

Anthropology N-460 (437). Comparative Social Structure and Political Anthropology

Prerequisite: One credit in Anthropology at CEGEP level or Anthropology 011 or 211 or N-211. A survey of important problems of kinship, economic and political structure from selected tribal and peasant cultures. Stress will be placed on the empirical findings of field and library research. The second half of the course will deal with problems of political organization and leadership in the new nations of Africa and Asia. (Full course).

Anthropology N-461 (461). State Formation

Prerequisites: Two credits in Anthropology. A study of the formation of the earliest state societies in the Near East, East Asia, Middle and South America. The course will conclude with an analysis of 'secondary' states resulting from European intrusion into South East Asia and Africa. (Half course).

Anthropology N-462 (411). American Indian

Prerequisite: One credit in Anthropology at CEGEP level or Anthropology 011 or 211 or N-211. The principles of general anthropology applied in a survey course on the American Indians. The advent of man to America; early cultural developments and the differentiation of the various groups or tribes; the culture of the Mayas, Toltecs, Aztecs, Pueblos, Iroquois, Eskimos, Northwest coast tribes, Andean, and other early civilizations of North and South America; the cultural contributions of the Indian to western civilization. (Full course).

NOTE: — Students who have credit for Sociology 232 may not take this course for credit.

Anthropology N-494 (486). Special Seminar

Prerequisites : At least two credits in Anthropology or permission of the department. Additional prerequisites may be added according to subject matter. Subject matter will vary from year to year to take advantage of the special interests of the seminar leader. This course will provide opportunities to senior students for discussion and advanced study. (Full course).

NOTE: — With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time for credit under Anthropology N-495.

Anthropology N-495 (487). Special Seminar

Prerequisite: Permission of the department. Additional prerequisites may be added according to subject matter. A student repeating Anthro-

pology N-494 for a second time registers for credit under Anthropology N-495. (Half course).

Anthropology N-497 (488). Special Seminar

Prerequisites: At least two credits in Anthropology or permission of the department. Additional prerequisites may be added according to subject matter. Subject matter will vary from year to year to take advantage of the special interests of the seminar leader. This course will provide opportunities to senior students for discussion and advanced study. (Half course).

NOTE: — With the permission of the department, a student may take this course twice for credit, provided that a different subject is dealt with the second time. He will register the second time for credit under Anthropology N-498.

Anthropology N-498 (489). Special Seminar

Prerequisite: Permission of the department. Additional prerequisites may be added according to subject matter. A student repeating Anthropology N-497 for a second time registers for credit under Anthropology N-498. (Half course).

Cognate Courses
Archaeology N-212. Introduction to Archaeology II (Area IV)
Linguistics N-221. Introduction to Linguistics (Area IV)
Philosophy N-376. Philosophy of the Social Sciences (Area I)

VI
faculty of science

CURRICULUM FOR THE DEGREE OF BACHELOR OF SCIENCE

ADMISSION REQUIREMENTS

General Admission requirements are listed on page 46.

Specific requirements are those contained in the CEGEP pre-Science profile or the equivalent in university collegial programmes, that is:

Sir George Williams University		CEGEP
Biology	001	301
Chemistry	001	101
	002	201
Mathematics	002	101
	003	103
	004	105
	005	203
Physics	001	101
	002	201
	003	301

In 1971-2 the majority of students entering first year of the Science undergraduate programme will be graduates of the Sir George Williams Collegial programme. Consequently, prerequisites, where listed, are given Sir George Williams numbers. Biology 002 is the equivalent of CEGEP Biology 401.

DEGREE REQUIREMENTS

The Bachelor of Science degree will require a total of 15 full-course equivalents or the equivalent. Ten of these must be taken from the courses listed as courses offered in the Faculty of Science in the University Announcement.

Students are required to indicate in their application the choice of a general, major or honours programme.

A major programme will consist of a minimum of seven and a maximum of ten specified full courses or their equivalent.

An honours programme will consist of a minimum of ten specified full courses or their equivalent.

MAJOR PROGRAMMES

A major is an approved sequence of courses in a specific field which may include certain approved courses in other closely related subjects. The term major as used by Sir George Williams University implies that a student has followed, within the requirements for the degree, a planned programme in a specialized field.

Students registering upon entry in a major programme must, in the course of their first year, establish an approved sequence of courses for their degree programme through consultation with the Chairman of the Department concerned or his representative.

REQUIREMENTS FOR MAJORS

Biochemistry

The following courses, in an approved sequence, constitute a major in Biochemistry:

First Year: Chemistry N-211*, N-213*, N-231, N-241 and one full-course equivalent in Biological Sciences.

Second Year: Chemistry N-331 or N-341, N-351, N-371 and one full-course equivalent in Biological Sciences.

Third Year: Chemistry N-471 or N-472 and one full-course equivalent in Biological Sciences, Biophysics. Chemistry or Psychology listed under Science Faculty.

Biological Sciences

The following courses, in an approved sequence, constitute a major in Biological Sciences:

First Year: Biology N-224*, N-213* and Chemistry N-231.

Second Year: Biology N-342, Zoology N-320 or both Botany N-320* and N-360*.

Third Year: Biology N-380* and N-381* (Biology N-380* or N-381* and N-380* may be taken in second year.)
     In addition four full-course equivalents taken in the

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* Half course

Department of Biological Sciences or in another related field chosen in consultation with the department. Students who choose Zoology N-320 in second year must take Zoology N-211 in the first year.

NOTE: - Students who choose Chemistry N-371 as an elective are reminded that Chemistry N-231, Chemistry N-241 and Chemistry N-211 are prerequisites. However, a student may be exempted from Chemistry N-211.

Chemistry

The following courses, in an approved sequence, constitute a major in Chemistry:

First Year: Chemistry N-211*, N-213*, N-221, N-231, N-241.

Second and   Chemistry N-311*, N-321, N-331, N-341, N-353 and
Third Years: one full-course equivalent in Chemistry.

Geology

The following courses, in an approved sequence, constitute a major in Geology:

First Year: Geology N-211, N-231*, N-232* and Chemistry N-241.

Second Year: Geology N-321, N-341, N-351, N-352*, N-353*.

Third Year: Geology N-460, one additional full-course equivalent in Geology or the equivalent.

It is advisable that geology students do at least one summer of field work with government geological field parties or with private exploration companies.

Mathematics

The following courses, in an approved sequence, constitute a major in Mathematics:

Mathematics N-241, N-261, N-271*, N-281, N-291*, N-361, N-391*, and two and one-half additional full-course equivalents in Mathematics, or the equivalent, approved by the department.

Mathematics (Optimization)

The following courses, in an approved sequence, constitute a major in Mathematics (Optimization):

* Half course

Mathematics N-241, N-261, N-271*, N-281, N-291*, N-312*, N-331, N-351*, N-431, and one other full-course equivalent in Mathematics or related field approved by the department.

Statistics

The following courses, in an approved sequence, constitute a major in Statistics:

Mathematics N-241, N-261, N-271*, N-281, N-291*, N-341*, N-342*, N-343*, N-351*, N-352*, and one and one-half other full-course equivalents in Mathematics or related fields approved by the department.

Psychology (Bachelor of Science)

First year: Zoology N-211, Chemistry N-231, Psychology N-271 or N-273.

First or
Second Year: Psychology N-412.

Second and   Five full-course equivalents selected from Psychology
Third Years: N-421, N-422, N-432, N-461, N-241 or N-242, N-275*, N-413, N-428, N-434, N-438, N-442, N-452, N-454, N-462, N-471, N-481, N-491*, N-492*, N-493*, N-494*.

    This option must include at least one of the first four listed.

The Psychology courses listed on page 223 of this announcement are acceptable as Science credits in the Bachelor of Science degree. The course descriptions can be found in the Faculty of Arts section.

Experimental Physics

The following courses, in an approved sequence, constitute a Major in Experimental Physics:

First Year: Physics N-242, N-252; Mathematics N-261, N-270.

Second Year: Physics N-345, N-353*, N-354, N-365*; Mathematics N-311*.

Third Year: Physics N-434*, N-435*, N-466*, N-496.

* Half course

Theoretical Physics

The following courses, in an approved sequence, constitute a Major in Theoretical Physics:

First Year: Physics N-242, N-252, Mathematics N-261, N-270, N-281.

Second Year: Physics N-336, N-345, N-365*, Mathematics N-366*.

Third Year: Physics N-477* and one and one-half additional full-course equivalents chosen from among Physics N-434*, N-435*, N-457, N-466*, N-467*, N-478*.

HONOURS PROGRAMMES

An honours degree indicates specialization within a field and high academic standing. In order to qualify for an honours degree a student must meet all the academic qualifications and comply with the regulations set forth below.

1. A candidate for an Honours degree should indicate such intention at registration, and consult the Honours representative of the department (s) concerned as soon as possible. His Honours standing will be reviewed annually. However, a student who has followed the courses prescribed for the Honours programme, and has met all the requirements, may enter the programme, with the approval of the Department Chairman at any time before beginning the final five courses. No retroactive approval of entry may be granted.

2. An Honours student must meet the general degree requirements as well as the specific requirements for an Honours degree, and must obtain at least a 'C' average over the total degree programme. Failure in any course will mean suspension from the Honours programme. Reinstatement is possible only by recommendation by the Honours representative.

3. An Honours student must obtain a 'B' average with no grade lower than 'C' in all courses in the basic Honours programme.

4. A student who enters with advanced standing may apply pro tanto credits, which are applicable, to the Honours degree requirements, upon approval by the Department.

5. A student shall be allowed to qualify for only one Honours degree.

Half Course

6. Honours standing in any programme is granted upon graduation only with the approval of the University Council.

REQUIREMENT FOR HONOURS

Biological Sciences

The following courses constitute an Honours programme in Biological Sciences, provided the student maintains the required academic standing:

Cell and Molecular Biology Option

First Year: Biology N-224*, N-213*; Chemistry N-231 and N-241.

Second Year: Biology N-342; Zoology N-320 or both Botany N-320* and Botany N-360*; Chemistry N-371.

Third Year: Biology N-445*, N-446*, N-490, N-433*, N-380*, N-381*. (Biology N-380* or N-380* and N-381*, may be taken in second year).

In addition three and one-half full course equivalents in Biological Sciences or related fields chosen in consultation with the Department of Biological Sciences. Students who choose Zoology N-320 in second year must take Zoology N-211 in the first year.

Ecology Option

First Year: Biology N-224*, N-213*; Chemistry N-231; Botany N-210*.

Second Year: Zoology N-320 or Botany N-320* and N-360*; Botany N-310* or Zoology N-315*; Biology N-342.

Third Year: Botany N-310* or Zoology N-315*; Biology N-490, N-380*, N-381* (Biology N-380* or N-380* and N-381* may be taken in the second year).

In addition five and one-half credits in Biological Sciences or related fields chosen in consultation with the Department of Biological Sciences. Students who choose Zoology N-320 in second year must take Zoology N-211 in first year.

Physiology and Developmental Biology Option

First Year: Biology N-224*, N-213*; Chemistry N-231.

Half course

Second Year: Zoology N-320 or Botany N-320* and N-360*; Biology N-342.

Third Year: Zoology N-360 or Botany N-421* and N-461*; Botany N-422 or Chemistry N-371; Biology N-490, N-380*, N-381* (Biology N-380* or Biology N-380* and N-381* may be taken in second year).

In addition five full-course equivalents from the field of Biological Sciences or related fields chosen in consultation with the Department of Biological Sciences. Students who choose Zoology N-320 in second year must take Zoology N-211 in first year.

NOTE: - Students who choose Chemistry N-371 are reminded that Chemistry N-231, Chemistry N-241 and Chemistry N-211 are prerequisites. However, a student may be exempted from Chemistry N-211.

Chemistry

The following courses constitute an Honours programme in Chemistry, provided the student maintains the required academic standing:

First Year: Chemistry N-211*, N-213*, N-221, N-231, N-241; Mathematics N-270.

Second Year: Chemistry N-311*, N-321, N-331, N-341, N-353.

Third Year: Chemistry N-431, N-441, N-451, N-461, N-491.

Mathematics

The following courses constitute an Honours programme in Mathematics, provided the student maintains the required academic standing:

First Year: Mathematics N-241, N-261, N-271*, N-281, N-291*.

Second Year: Mathematics N-361, N-366*, N-371*, N-381*, N-391*, and one other full-course equivalent, or equivalent approved by the department from among: Mathematics N-311*, N-312*, N-231*, N-322*, N-331, N-351*, N-392*.

Third Year: Mathematics N-461, N-466*, N-467*, N-491*, N-492* and one other full-course equivalent, or equivalent approved by the department from among: Mathematics N-431, N-432*, N-451*, N-471*, N-475* and second year options not taken previously.

NOTE: - Students with a strong interest in optimization may receive departmental permission to take Mathematics N-312, N-331, N-351* as their options and to replace Mathematics N-467* and N-492* by Mathematics N-431, and N-491* by N-432*.*

* Half course

Statistics

The following courses constitute an Honours programme in Statistics provided the student maintains the required academic standing:

First Year: Mathematics N-241, N-261, N-271*, N-281, N-291*.

Second Year: Mathematics N-351*, N-352*, N-361, N-366*, N-381*, N-391*, and one-half course approved by the department from among: Mathematics N-311*, N-312*, N-321*, N-341*, N-342*, N-343*.

Third Year: Mathematics N-371*, N-451*, N-452*, N-461, N-466*, and one full-course equivalent, or equivalent approved by the department from among: Mathematics N-331, N-431, N-441*, N-467*, N-471*, N-491*, N-492* and second year options not taken previously.

NOTE: - Students with a strong interest in optimization may receive departmental permission to take Mathematics N-312 and N-331 as their options; and to replace either N-371* and N-466* or N-461 by N-431.*

Physics

The following courses constitute an Honours programme in Physics, providing the student maintains the required academic standing:

First Year: Physics N-242, N-252; Mathematics N-261, N-270, N-281.

Second Year: Physics N-336, N-345, N-353*, N-354, N-365*; Mathematics N-311*, N-366*.

Third Year: Physics N-434*, N-435*, N-457, N-466*, N-467*, N-477*, N-478*, N-496.

Psychology (Bachelor of Science)

First Year:
Psychology N-241 or N-242, N-273 (see NOTE), N-412.

Second Year:
Three courses chosen from Psychology N-421, N-422, N-432, N-434, N-438, N-442, N-461. In addition N-275* may be taken as an option.

* Half course

Third Year:
Psychology N-413, N-472; one full-course credit selected from Psychology N-421, N-422, N-428, N-432, N-434, N-442, N-454, N-452, N-461, N-462, N-481, N-482, N-491*, N-492*, N-493*, N-494*.

The Psychology courses listed on page 223 of this announcement are acceptable as Science credits in the Bachelor of Science degree.

In addition:

Biology Option

First Year:
Zoology N-211; Chemistry N-231

Second Year:
Biology N-224

Third Year:
Zoology N-320
or

Mathematics Option

Mathematics N-241, N-281
Two additional full-course credits from among Mathematics N-261, N-270, N-341*, N-343*, N-351*, N-352*, Computer Science N-211*, N-212*.

NOTE: - Students who have taken Psychology N-271 in first year and are then admitted to the Honours programme will be exempt from Psychology N-273 but may be required to take Psychology N-471 in second year.

The course descriptions can be found in the Faculty of Arts section.

FACULTY OF SCIENCE

John R. Ufford, *Dean*
Frederick Bedford, *Assistant Dean*

COURSES

BIOLOGICAL SCIENCES

Gerard Leduc, *Associate Professor of Biology, and Chairman of the Department.*

Half course

Donald L. Peets, *Professor of Human Genetics.*
F.S. Abbott, *Associate Professor of Biology.*
Hildegard E. Enesco, *Associate Professor of Biology.*
R.K. Ibrahim, *Associate Professor of Biology.*
C.F. MacLeod, *Associate Professor of Biology.*
Perry D. Anderson, *Assistant Professor of Biology.*
S.S. Ashtakala, *Assistant Professor of Biology.*
Ruth L. Lowther, *Assistant Professor of Biology.*
Robert H. McLaughlin, *Assistant Professor of Biology*
Elaine B.S. Newman, *Assistant Professor of Biology.*
Daniel F. Waltz, *Assistant Professor of Biology.*
Robert Roy, *Visiting Assistant Professor of Biology.*
Sylvia M. Ruby, *Visiting Assistant Professor of Biology.*

BIOLOGY

Biology N-201 (251). General Biology I
A survey of basic principles of Biology: chemical basis of life, cell organization and control; elements of anatomy, physiology, morphogenesis, heredity and evolution. Lectures and laboratory. (Half course).
NOTE: — Students who have credit for Biology 002, Botany 211 and/or Zoology 222 may not take this course for credit.

Biology N-202 (252). General Biology II
Prerequisite: Biology 001 or the equivalent. Comparative anatomy and physiology, genetics, embryology and cellular metabolism. Elements of ecology and field biology. Lectures and laboratory. (Half course).

NOTE: — Students who have credit for Biology 002, Botany 211 and/or Zoology 222 may not take this course for credit.

Biology N-213 (453). Fundamentals of Ecology
Prerequisite: Biology 002 or N-202, previously or concurrently. A study of the great climatic regions of the world and the adaptation of plants and animals to their environments. Lectures only. (Half course).

NOTE: — Students who have credit for Botany 416 or Zoology 451 may not take this course for credit.

Biology N-224 (444). Cell Physiology
Prerequisite: Biology 002 or N-202, previously or concurrently, Chemistry N-231 previously or concurrently. Physics 001, 002, and 003 or the equivalent. The study of plant and animal cellular organelles and their functions. Lectures and laboratory. (Half course).

Biology N-241 (241). Genetics and Human Welfare
A course on the principles of heredity as understood by modern bio-

logy. It deals also with the application of genetic principles to organisms including man. The biological basis of social problems is dealt with at some length. The doctrine of organic evolution and its implications for human life and welfare are considered. Lectures only. (Full course).

Biology N-250 (Botany 414). Biology of Fungi, Bacteria and Viruses

Prerequisite: Biology 002 or N-202, previously or concurrently. A survey of the fungi, bacteria and viruses. Their functional activities, morphology, distribution, evolution and classification are considered. Lectures and laboratory. (Full course).

Biology N-314 (454). Fundamentals of Limnology

Prerequisite: Chemistry 211 or equivalent, Physics 211 or N-213 previously or concurrently. Geographical, physical and chemical characteristics of lakes and streams in relation to productivity. Lectures only. (Half course).

NOTE: — Students who have credit for Biology 452 may not take this course for credit.

Biology N-342 (442). Genetics

Prerequisites: Biology 002 or N-202, Chemistry N-231. A course to illustrate the fundamental principles of inheritance in plants and animals with emphasis on experimental and molecular aspects. Lectures and laboratory. (Full course).

Biology N-371 (481). History of Biology

Prerequisites: Any two courses from the Department of Biological Sciences. A course following the growth of Biological Sciences. Lectures only. (Full course).

Biology N-380 (482). Biostatistics I

Prerequisites: 2nd or 3rd year standing. Application of statistical methods to biological data. Descriptive statistics. Binomial, Poisson and Normal distributions. Confidence limits. Tests of significance. Introduction to analysis of variance, correlation and regression. Analysis of frequencies. Lectures and laboratory. (Half course).

NOTE: — Students who have credit for Biology 230 may not take this course for credit.

Biology N-381 (483). Biostatistics II

Prerequisite: Biology N-380. Sampling methods. Analysis of variance and experimental design. Regression and correlation techniques. Bioassay. Non-parametric statistics. Analytical methods in field biology genetics and microbiology. Lectures and laboratory. (Half course).

Biology N-415 (455). Biological Limnology

Prerequisites: Biology N-314, Zoology N-315, Zoology N-210 or Bo-

tany N-212. Ecology of freshwaters, primary and secondary productivity in lakes and streams. Biological aspects of water pollution. Lectures, field work (two weeks at the end of the summer preceeding the course) and laboratory. (Full course).

NOTE: — Students who have credit for Biology 452 may not take this course for credit.

Biology N-432 (472). Histological Technique

Prerequisites: Botany N-230 or Zoology N-330, previously or concurrently, and permission of the instructor. A project course in which each student is assigned a topic for investigation. Each study will involve various preparations of plant or animal tissues for microscopic study and some practical experience in photomicrography. Lectures and laboratory. (Full course).

NOTE: — Students who have credit for Biology 271 may not take this course for credit.

Biology N-433 (443). Cytology

Prerequisite: Biology N-342. An introduction to cell structure of both plants and animals, with special reference to genetics and emphasis on the experimental and molecular aspects. Lectures and laboratory. (Half course).

Biology N-445. Biological Regulatory Mechanism

Prerequisites: Chemistry N-371, Biology N-342 or permission of instructor. Metabolic pathways with an emphasis on their control and coordination; intercellular messengers in developmental and adult systems. Lectures and conference. (Half course).

Biology N-446. Molecular Genetics

Prerequisites: Chemistry N-371, Biology N-342 or permission of the instructor. Basic microbial and molecular genetics including mechanisms of gene transfer, mutation and recombination. Use of genetics in the study of regulation of gene expression, the code and mechanisms in protein synthesis; bacteriophage genetics; episomes. Lectures and conference. (Half course).

Biology N-490 (491). Special Study

Prerequisite: 3rd year standing and permission from the Chairman of the department or his representative. In this course, the student undertakes a special project to develop his knowledge of scientific procedures as used by biologists. (Full course).

BOTANY

Botany N-210 (430). Eastern North American Flora

Prerequisite: Biology 002 or N-202, previously or concurrently. A

study of higher plant life occurring in Eastern North America, includ-
ing their recognition, collection, identification, classification and dis-
tribution. Field work for practical experience with the regional flora in
various habitat. Lectures and laboratory. (Half course).

NOTE: — Students who have Botany 411 may not take this course for
credit.

Botany N-212 (415). Biology of the Non-Vascular Green Plants

Prerequisite: Biology 002 or N-202. A survey of the algae, lichens and
mosses. Their functional activities, morphology, distribution, evolution
and classification are considered. Lectures and laboratory. (Full course).

Botany N-213 (421). Economic Botany

Prerequisite: Biology N-213. Origin, development and use of economic
plants. Their role in civilization with particular emphasis on the actual
problems of food and alimentation. Notions of agricultural ecology.
Lectures only. (Half course).

Botany N-230 (412). Plant Anatomy

Prerequisite: Biology N-202, 002 or equivalent previously or concur-
rently. The internal anatomy and phylogenetic development of structure
in vascular plants. Includes developmental, pathological and ecological
aspects of anatomy and paleoanatomy. Laboratory work includes prepa-
ration of plant material for microscopic study. Lectures and laboratory.
(Full course).

Botany N-310 (420). Plant Ecology

Prerequisites: Botany N-210; Biology N-213; Biology N-380 previous-
ly or concurrently. Dynamic effects of physical and biotic factors on
vegetation: succession, climax and influence of man. Elements of ex-
perimental ecology and field biology from the autecological to the phyto-
geographical level. Lectures, laboratory and field trips. (Half course).

NOTE: — Students who have credit for Botany 416 may not take this
course for credit.

Botany N-311. Taxonomy of Higher Plants

Prerequisite: Botany 210 previously or concurrently. Principles of clas-
sification, survey of the major families of gymnosperms and flowering
plants, morphology and evolution. Research methods in Taxonomy. Lec-
tures, field-work and laboratory. (Half course).

NOTE: — Students who have Botany 411 may not take this course for
credit.

Botany N-320 (431). Plant Metabolism

Prerequisites: Biology N-224, Chemistry N-231. A comprehensive

study of the metabolic activities of higher plants with emphasis on water
relations, mineral nutrition, photosynthesis and respiration, carbon and
nitrogen metabolism. Lectures and laboratory. (Half course).

NOTE: — Students who have Botany 413 may not take this course for
credit.

Botany N-360 (432). Plant Growth

Prerequisite: Botany N-320 previously or concurrently. A physiolo-
gical and biochemical study of growth regulators, their mechanism of
action and their role in plant growth and metabolism. Lectures and la-
boratory. (Half course).

NOTE: — Students who have Botany 413 may not take this course for
credit.

Botany N-421. Advanced Plant Physiology

Prerequisite: Botany N-320. A modern approach to understanding of
the metabolic processes in relation to organelle structure, energy con-
servation, enzyme activities and metabolic regulations. Lectures and
laboratory. (Half course).

Botany N-422 (418). Plant Biochemistry

Prerequisites: Biology 002 or N-202 and Chemistry N-231. Biochemic-
al study of the common natural plant constituents including secondary
metabolites, their biosynthesis and role in plant metabolism. Lectures
and laboratory. (Full course).

Botany N-461 (417). Plant Morphogenesis

Prerequisites: Botany N-320 and N-360. A discussion of plant regu-
latory mechanisms and the control of growth and morphogenesis. The
use of plant tissue culture techniques in metabolic and morphogenetic
studies. Lectures, seminars and laboratory. (Half course).

ZOOLOGY

Zoology N-210 (421). Invertebrate Zoology

Prerequisite: Biology 002 or N-202, previously or concurrently. A
study of the animal kingdom (excluding the vertebrata), from the point
of view of evolution and adaptive radiation with the object of understanding
the several phyla, their organization and diversity, aspects of functional
morphology, embryology, life-history, ecology and systematics. There
will be emphasis on the importance of the invertebrates to human life and
welfare. Lectures and laboratory. (Full course).

Zoology N-211 (422). Chordate Anatomy

Prerequisite: Biology 002 or N-202, previously or concurrently. The
comparative anatomy of chordate animals, their reproduction, develop-

ment, distribution and evolution. In the laboratory, representatives of the principal vertebrates classes are dissected. Lectures and laboratory. (Full course).

Zoology N-213 (424). Parasitology

Prerequisite: Biology 002 or N-202, previously or concurrently. A survey of the parasitic groups of invertebrates with special reference to the parasites of man. Lectures and laboratory. (Half course).

Zoology N-214 (425). Entomology

Prerequisite: Biology 002 or N-202, previously or concurrently. An introduction to the study of insects, their morphology, taxonomy, physiology and ecology. Lectures and laboratory. (Half course).

Zoology N-315 (452). Animal Ecology

Prerequisites: Botany N-210; Biology N-213; Biology N-380 previously or concurrently. A study of the factors influencing animal populations, regulation of animal numbers involving competition, predation, migrations and exploitation by man. Lectures, field work and laboratory. (Half course).

NOTE: — Students who have credit for Zoology 451 may not take this course for credit.

Zoology N-320 (431). Animal Physiology

Prerequisites: Physics 211 or equivalent; Chemistry N-231; a grade C or better in Biology N-224 and Zoology N-211. A study of comparative animal physiology at the systems level. Lectures and laboratory. (Full course).

Zoology N-330 (471). Comparative Vertebrate Histology

Prerequisite: Zoology N-211. A comparative study of the microscopic characteristics of cells, tissues and organs of the vertebrates. Lectures and laboratory. (Full course).

Zoology N-360 (461). Vertebrate Embryology

Prerequisite: Zoology N-211. The fundamental processes of growth and development in the vertebrates. A comparative study is made of selected vertebrate species with emphasis on the experimental and molecular aspects. Lectures and laboratory. (Full course).

Zoology N-412 (423). Advanced Vertebrate Ecology

Prerequisites: Zoology N-211 and N-315. A study of taxonomy, distribution and population phenomena using vertebrate examples. Emphasis will be on mammals and birds. Seminars and term-papers based on a study of recent literature will form an important part of the course. Lectures, seminars and laboratory. (Full course).

Zoology N-421 (432). Advanced Animal Physiology

Prerequisites: Zoology N-210 and N-320, Biology N-213 previously or concurrently, permission of the instructor. Lectures and seminars dealing with selected topics in environmental and comparative physiology. Project type laboratory studies will include vertebrate and invertebrate representatives. Lectures and laboratory. (Full course).

CHEMISTRY

Roger H. C. Verschingel, *Professor of Chemistry and Chairman of the Department.*
John Russell Ufford, *Professor of Chemistry and Dean.*
Thomas J. Adley, *Associate Professor of Chemistry.*
George Campbell, *Associate Professor of Chemistry.*
Lawrence D. Colebrook, *Associate Professor of Chemistry.*
James G. Dick, *Associate Professor of Chemistry.*
Zacharias Hamlet, *Associate Professor of Chemistry.*
Jacques Lenoir, *Associate Professor of Chemistry.*
Robin T. B. Rye, *Associate Professor of Chemistry.*
Roderick E. Townshend, *Associate Professor of Chemistry.*
Ronald Westbury, *Associate Professor of Chemistry.*
Peter C. Bird, *Assistant Professor of Chemistry.*
Nick Serpone, *Assistant Professor of Chemistry.*
O. S. Tee, *Assistant Professor of Chemistry.*

Chemistry N-211 (412). Introductory Quantitative Analysis

Prerequisites: Chemistry 002; Physics 003; Mathematics 002 and 004 or equivalent courses. Chemical equilibrium as applied to volumetric and gravimetric procedures; general theory of volumetric titrations; titration curves; application of general titration theory to neutralization, precipitation, complexation, oxidation-reduction and non-aqueous solvent titrations; theory of potentiometry and potentiometric titrations; theory of gravimetric analysis; methods of separation by chemical and physical means; electrogravimetry and electrolytic separations; absorptimetric theory and absorptimetric methods of analysis. Lectures and laboratory. (Half course).

Textbook: Skoog and West: *Fundamentals of Analytical Chemistry* (Holt, Rinehart, Winston, 2nd edition).

Chemistry N-213 (413). Statistical Treatment of Chemical Data

Prerequisites: Chemistry 002; Physics 003, Mathematics 002 and 004 or equivalent courses. The statistical treatment of chemical data including: observations and measurements; error and accuracy; significant figures; expression of results; probability theory, normal and Poisson error distributions; precision; measures of spread; propagation of errors; rejection of observations; statistical analysis; graphical analysis; straight line law; nonlinear laws; method of least squares; accuracy of values derived from graphs; literature data primary and secondary sources; use of chemical literature indices. Lectures only. (Half course).

Textbook: Eckschlager: *Errors, Measurement and Results in Chemical Analysis* (Van Nostrand).

Chemistry N-221 (411). Introductory Inorganic Chemistry

Prerequisites: Chemistry 002; Physics 003; Mathematics 002 and 004 or equivalent courses. Introduction to structural and descriptive inorganic chemistry including: the chemical properties of atoms; properties of ionic compounds; bonding in covalent compounds; spectroscopic methods of determining atomic and molecular structure; x-ray crystallography; the periodic properties of the elements and their relationship to descriptive inorganic chemistry; introduction to transition metal chemistry. Lectures and laboratory. (Full course).

Textbooks: Jolly: *The Chemistry of the Non-Metals* (Prentice Hall); Companion: *Chemical Bonding* (McGraw-Hill); Hochstrasser: *The Behaviour of Electrons in Atoms* (Benjamin); Barrow, *The Structure of Molecules* (Benjamin).

Chemistry N-231 (421). Introductory Organic Chemistry

Prerequisite: Chemistry 002 or an equivalent course. Chemistry of aliphatic and aromatic compounds; structural isomerism; stereoisomerism; mechanisms; electronic theories and stereochemistry and organic reactions; applications of spectroscopy to organic chemistry. Lectures and laboratory. (Full course).

Textbook: Morrison and Boyd: *Organic Chemistry* (Allyn and Bacon, 2nd edition).

Chemistry N-241 (431). Introductory Physical Chemistry

Prerequisites: Chemistry 002; Physics 003; Mathematics 002 and 004 or equivalent courses. Real gases; kinetic molecular theory; equilibrium thermodynamics (first, second and third laws); electrochemical cells and the Nernst equation; applications of thermodynamics to one-component, two-component and three-component systems; chemical kinetics; ions in solution; radiation chemistry. Lectures only. (Full course).

Textbook: Barrow: *Physical Chemistry* (McGraw-Hill, 2nd edition).

Chemistry N-281 (461). Industrial Inorganic Chemistry

Prerequisite: Chemistry 002 or an equivalent course. Study of industrial inorganic processes including: mineral acids; alkalies; synthetic ammonia; fertilizers; cements; ceramics; glass; electrothermal products; electrometallurgy; water treatment. This course is not applicable towards a major in Chemistry. Lectures only. (Half course).

Textbook: Shreve: *Chemical Process Industries* (McGraw-Hill, 3rd edition).

Chemistry N-301 (401). Chemical Pedagogy

Prerequisites: Chemistry 002 or an equivalent course; one full laboratory course at university level. The methodology of teaching Chemistry at various levels including: the objectives of chemical education; the presentation of chemical concepts; the communication skills; the mathematical skills; the editing of a course and its lectures; the philosophy of laboratory procedure; the examination; the textbook; planning and budgeting; visual aids. Lectures only. (Full course).

Chemistry N-311 (417). Advanced Quantitative Analysis

Prerequisites: Chemistry N-211, N-213, N-221; Chemistry N-353 previously or concurrently. The theory and application of instrumental methods of analysis to quantitative chemistry including: coulometry; coulometric titrations; conductometry; conductometric titrations; voltammetry and polarography; amperometric titrations; chronopotentiometry and chronoamperometry; spectrophotometry; spectrophotometric titrations; nephelometry, turbidimetry and fluorometry; flame photometry; atomic absorption spectroscopy; emission spectroscopy; x-ray absorption and emission (fluorescence) spectroscopy. Lectures and laboratory. (Half course).

Textbook: Erwig: *Instrumental Methods of Chemical Analysis* (McGraw-Hill, 3rd edition).

Chemistry N-321 (415). Advanced Inorganic Chemistry

Prerequisites: Chemistry N-211, N-221; Chemistry N-341 and N-353 previously or concurrently. Group theory and its application to chemical systems; chemical bonding on a quantitative level; magnetochemistry; ligand field theory, correlation diagrams, electronic spectra; stereo chemistry, stability of complex ions in solution; reaction mechanisms of coordination compounds; descriptive chemistry of the transition elements. Lectures and laboratory. (Full course).

Textbooks: Cotton and Wilkinson: *Advanced Inorganic Chemistry* (Wiley, 2nd edition); Kettle: *Coordination Compounds* (Appleton-Century-Crofts 1969); Angelici: *Synthesis and Technique in Inorganic Chemistry* (Saunders 1969); Cotton: *Chemical Applications of Group Theory* (Interscience 1963).

Chemistry N-331 (427). Intermediate Organic Chemistry

Prerequisites: Chemistry N-231, N-241; Chemistry N-353 previously or concurrently. Amplification of concepts presented in introductory organic chemistry; reaction mechanisms; catalysis; conformational analysis and stereochemistry. Laboratory includes qualitative analysis of compounds and mixtures by spectroscopic techniques; small scale preparations; selected experiments in physical organic chemistry. Lectures and laboratory. (Full course).

Textbook: March: *Advanced Organic Chemistry: Reactions, Mechanisms and Structure* (McGraw-Hill).

Chemistry N-336 (471). Natural Products I

Prerequisite: Chemistry N-231. Structures, stereochemistry and reactions of carbohydrates; synthesis, stereochemistry and physiochemical properties of amino acids; determination of amino acid sequences; synthetic methods; conformations of polypeptides and proteins. Lectures only. (Half course).

Textbooks: Guthrie and Honneyman: *Introduction to the Chemistry of Carbohydrates* (Oxford, 2nd edition); Kopple: *Peptides and Amino Acids* (Benjamin).

Chemistry N-337 (473). Natural Products II

Prerequisite: Chemistry N-231. The synthesis, stereochemistry and

structure determination of lipids (triglycerides, physopholipids, sphingolipids and sterols); steroid hormones; antibiotics; nucleotides. Lectures only. (Half course).

Textbooks: Ulbricht: *Purines, Pyrimidines and Nucleotides and the Chemistry of Nucleic Acids;* Yates, *Structure Determination.*

Chemistry N-338 (472). Chemistry of High Polymers I

Prerequisites: Chemistry N-231, N-241. Methods and mechanisms of polymer preparation; condensation polymerization; addition polymerization; ring opening reactions; vinyl and diene polymers; polyesters; polyamides; polythioethers; properties of polymers and their related monomers. Lectures only. (Half course).

Textbook: Lenz: *Organic Chemistry of Synthetic High Polymers* (Wiley).

Chemistry N-341 (432). Intermediate Physical Chemistry

Prerequisites: Chemistry N-241. Topics in chemical kinetics and thermodynamics including: mechanisms of elementary processes; reactions in the gas-phase and in solution; the Rice-Ramsperger-Kassel, and Slater theoretical treatments; Rice-Herzfeld mechanisms; applications of the foregoing treatments to selected systems; introduction to modern techniques for the study of very fast reactions; mathematical treatment of mixtures of real gases; partial molal properties; fugacities and activities; determination of activities of non-electrolytes and electrolytes. Lectures and laboratory. (Full course).

Textbooks: Laidler: *Chemical Kinetics* (McGraw-Hill, 2nd edition); Klotz: *Chemical Thermodynamics* (Benjamin, revised edition); Salzberg, et al: *Laboratory Course in Physical Chemistry* (Academic Press).

Chemistry N-346 (474). Chemistry of High Polymers II

Prerequisites: Chemistry N-231, N-241. Study of the physical chemistry of high polymers including: examination of the physical properties of polymers; methods for studying polymers; polymer solution theory; molecular weight distributions and fractionation; molecular weight determinations by colligative properties, light scattering and ultracentrifuge techniques; mechanisms and kinetics of condensation and addition polymerization; free radical and ionic polymerization. Lectures only (Half course).

Textbook: Morawetz: *Macromolecules in Solution* (Interscience).

Chemistry N-351 (440). Theory and Practice of Biochemical Techniques

Prerequisites: Chemistry N-211, N-231, N-241; Chemistry N-371 previously or concurrently. Basic principles and applications of UV, IR, Raman, fluorescence, phosphorescence, NMR and EPR spectroscopy and mass spectrometry to chemistry and biochemistry; basic principles and applications of gas chromatography, column chromatography, thin layer, chromatography, gel filtration and electrophoresis; introduction to optical rotary dispersion. Lectures and laboratory. (Full course).

Textbooks: Walker and Straw: *Spectroscopic Volume 2* (Chapman and Hall); Williams and Fleming: *Spectroscopic Methods in Organic Chemistry,* (McGraw-Hill).

Chemistry N-352 (449). Practice of Biochemical Techniques

Prerequisites: Chemistry N-353 and permission of the Chemistry department. Basic principles and applications of gas chromatography, column chromatography, thin-layer chromatography, gel filtration and electrophoresis; introduction to optical rotary dispersion. Lectures and laboratory. (Half course).

Chemistry N-353 (490). Introductory Chemical Instrumentation

Prerequisites: Chemistry N-211, N-231, N-241. Basic principles and applications of UV, IR, Raman, fluorescence, phosphorescence, NMR, and EPR spectroscopy and mass spectrometry to chemistry and biochemistry; basic principles of electricity and electronics; analysis of operational amplifier, servorecorder, pH meter, polarograph, logic and data acquisition circuits. Lectures and laboratory. (Full course).

Textbooks: Walker and Straw: *Spectroscopy Volume 2* (Chapman and Hall); Williams and Fleming: *Spectroscopic Methods in Organic Chemistry* (McGraw-Hill); Brophy, *Basic Electronics for Scientists* (McGraw-Hill).

Chemistry N-354 (499). Introductory Instrumentation

Prerequisites: Chemistry N-351 and permission of the Chemistry department. Basic principles of electricity and electronics; analysis of operational amplifier, servorecorder, pH meter, polarograph, logic and data acquisition circuits. Lectures and laboratory. (Half course).

Textbook: Brophy; *Basic Electronics for Scientists* (McGraw-Hill).

Chemistry N-371 (441). General Biochemistry

Prerequisites: Chemistry N-211, N-231, N-241; one full course in Biological Sciences at the university level. Comparative and functional approach to the chemical activities of living organisms including a fundamental simple compound common to most plants and animals and its utilization in biopolymers; basic metabolic patterns involved in life processes; introduction to bioenergetics and specialized functions of cells and organs; biochemical relationship to environment and its changes. Lectures and laboratory. (Full course).

Textbooks: Leninger: *Biochemistry* (Worth); West, Todd, et al: *Textbook of Biochemistry* (MacMillan).

Chemistry N-381 (464). General Industrial Chemistry

Prerequisites: Chemistry N-231, N-241. General aspects of industrial chemistry including: material balances; energy balances; the physical chemistry of industrial processes; factors governing plant location and process choice. This course is not applicable towards a major in Chemistry. Lectures only. (Half course).

Chemistry N-382 (462). Industrial Organic Chemistry I

Prerequisite: Chemistry N-231. Industrial organic processes including: organic synthesis; fermentation; coal and wood distillation; petroleum refining; oils and fats; pulp and paper; paints; resins and plastics; rubber. This course is not applicable towards a major in Chemistry. Lectures only. (Half course).

Textbook: Shreve: *Chemical Process Industries* (McGraw-Hill, 3rd edition).

Chemistry N-383 (463). Industrial Organic Chemistry II

Prerequisite: Chemistry N-231. This course is similar to Chemistry N-382, but deals with additional organic process industries. This course is not applicable towards a major in Chemistry. Lectures only. (Half course).

Textbook: Shreve: *Chemical Process Industries* (McGraw-Hill, 3rd edition).

Chemistry N-431 (428). Advanced Organic Chemistry

Prerequisite: Chemistry N-331, N-341, N-353. Advanced stereochemistry; atropisomerism; physical organic chemistry; chemistry of natural products; photochemistry. Laboratory includes experiments in physical organic chemistry; synthetic and instrumental methods. Lectures and laboratory. (Full course).

Textbook: March: *Advanced Organic Chemistry: Reactions, Mechanisms and Structure* (McGraw-Hill).

Chemistry N-441 (433). Advanced Physical Chemistry

Prerequisites: Chemistry N-341; Mathematics N-270 previously or concurrently. Advanced topics in thermodynamics; including equilibrium, non-equilibrium and statistical approaches to selected systems; methods of determination of activities; the free-energy function and its application; thermodynamics of solids; estimation of thermodynamic properties; de Donder's concepts; fused salts; high-temperature thermodynamics; elements of probability theory; microcanonical, canonical and grand canonical ensembles; the Boltzmann distribution; quantum mechanical treatment of an ideal gas; Fermi-Dirac and Bose-Einstein statistics; Einstein and Debye models of a monoatomic crystal; conformation of polymer chains. Lectures and laboratory. (Full course).

Textbook: Knuth: *Introduction to Statistical Thermodynamics* (McGraw-Hill); Salzberg, et al: *Laboratory Course in Physical Chemistry* (Academic Press).

Chemistry N-451 (491). Advanced Chemical Instrumentation

Prerequisites: Chemistry N-311, N-331, N-341, N-353. Rotational and rotational-vibrational spectroscopy of linear, symmetrical top and assymmetrical molecules; vibrational spectroscopy, molecular symmetry and group theory; Raman spectroscopy; Fourier transform spectroscopy; electron spin and wide-line NMR spectroscopy; digital electronics in control equipment, integration, signal averaging A to D and D to A conversion and data acquisition. Lectures and laboratory. (Full course).

Textbook: Barrow: *Introduction to Molecular Spectroscopy* (McGraw-Hill).

Chemistry N-461 (416). Theoretical Chemistry

Prerequisites: Chemistry N-321, N-341; Mathematics N-270. Introduction to quantum theory; vibrational and rotational spectroscopy; struc

ture of atoms and molecules; molecular orbital theory; valence bond theory; structure of metals, organo-metallic and coordination compounds; atomic and molecular spectroscopy; ligand field theory. Lectures only. (Full course).

Chemistry N-471 (443). Advanced Biochemistry I

Prerequisites: Chemistry N-351, N-371. Selected topics from the general area of physical biochemistry; ultracentrifugation and its applications; biopolymer size and shape, energetics of catabolism and anabolism; comparative biochemistry; chemistry of the central nervous system; protein and enzyme chemistry; metabolic pathways. Lectures and laboratory. (Full course).

Chemistry N-472 (444). Advanced Biochemistry II

Prerequisites: Chemistry N-351, N-371. Selected topics from the general areas of structural biochemistry; biosynthetic pathways; lipids; carbohydrates; nucleic acids. Lectures and laboratory. (Full course).

Chemistry N-491 (450). Research Project and Thesis

Prerequisites: Permission of the Chemistry department. The student will work on a research project under the direction of a staff member, and will write a thesis on the results. (Full course).

NOTE: – This course is required of final-year Honours students. Some final-year major students may take it with special permission. Students planning to take this course should consult with the Chemistry department as early as possible the year before the final year.

COMPUTER SCIENCE

The courses in Computer Science listed below are acceptable as science credits in the Bachelor of Science degree. Course descriptions can be found in the Faculty of Engineering section. All courses listed are half courses.

Computer Science N-211 (211) Introduction to Computers and Computing
Computer Science N-212 (212) Computer Programming II
Computer Science N-401 (401) Computer Organization
Computer Science N-402 (402) Computer Systems
Computer Science N-403 (403) Programming Languages
Computer Science N-411 (411) Principles of Data Processing
Computer Science N-412 (412) Data and File Structures I
Computer Science N-413 (413) Data and File Structures II
Computer Science N-421 (421) Introduction to the Theory of Automata
Computer Science N-430 (430) Logical Design and Switching Theory
Computer Science N-440 (440) Heuristic Planning
Computer Science N-450 (450) Discrete System Simulation
Computer Science N-471 (471) Digital Computer Programming and Numerical Methods

Computer Science N-490 (490) Seminar and Project.

ECONOMICS

The courses in Economics listed below are acceptable as Science credits in the Bachelor of Science degree. Course descriptions can be found on pages 143, 149, 150.

Economics 281. **Mathematics for Economists I**
Economics 482. **Introduction to Econometrics I**
Economics 483. **Introduction to Econometrics II**
Economics 484. **Mathematical Models in Economics**
Economics 485. **General Equilibrium Analysis**

GEOLOGY

André N. Deland, *Associate Professor of Geology, and Chairman of the Department.*
Henri S. de Romer, *Associate Professor of Geology.*
Stephen Kumarapeli, *Assistant Professor of Geology.*

Geology N-211 (211). General Geology

An introductory course to the study of the earth; early history and major features of the earth; elementary mineralogy; igneous rocks and volcanism; sedimentary rocks; surface processes; geochronology and historical geology and paleontological evolution of North America; basic applied geology. The lab. work comprises: preliminary identification of rocks and minerals; study and interpretation of topographic, geological and geophysical maps. Lectures and laboratory. (Full course).

NOTE: — Students who have credit for Geology 011 or the equivalent may not take this course for credit.

Geology N-231 (221). Mineralogy

The study of the physical properties of minerals; their chemical properties; descriptive and determinative mineralogy; crystallography; various classes of symmetry. A few field trips near Montreal. Lectures and laboratory. (Half course).

NOTE: — Students who have credit for Geology 021 or the equivalent may not take this course for credit.

Geology N-232 (222). Optical Mineralogy

Prerequisite: Geology N-231. The study of minerals under the polarizing and petrographic microscope. Identification of minerals in thin sections and in oil immersion. Lectures and laboratory. (Half course).

NOTE: — Students who have credit for Geology 022 or the equivalent may not take this course for credit.

Geology N-321 (212). Earth History and Stratigraphy

Prerequisite: Geology N-211 previously or concurrently. The earth's history both physical and biological as revealed in strata and by fossils. Introduction to the methods and principles of historical geology, stratigraphy and sedimentation. Study of paleogeographic maps. Systematic examination from the oldest known rocks to the youngest ones and from the oldest known fossils to the most recent ones including the history of man. Studies of the various rock, time-rock and time units. Stratigraphic correlation by means of lithology and paleontology. Typical stratigraphic sections will be examined. Lectures only. (Full course).

NOTE: — Students who have credit for Geology 012 or the equivalent may not take this course for credit.

Geology N-341 (411). Petrology

Prerequisite: Geology N-211 previously or concurrently. The three classes of rocks; composition and crystallization of the magma; forms, textures and structures of igneous rocks; mineralogy, texture, structure and origin of sedimentary rocks; types of metamorphism and their products: metamorphic minerals, processes and structures; rock nomenclature. Lectures and laboratory (Full course).

Geology N-351 (421). Structural Geology

Prerequisite: Geology N-211. Physical properties of rocks; description and classification of folds; significance of minor structures associated with folds; classification of faults and other fractures; unconformities; composition and structure of the earth; orogeny and epeirogeny; elementary structural petrology; structural control and mineralization. About one third of the time is devoted to the solution and practical application of structural problems using orthographic and stereographic projections. Lectures only. (Full course).

Geology N-352 (422). Photogeology

Prerequisite: Geology N-341 previously or concurrently. Scope and purpose of photo-interpretation; geometry of aerial photographs and basic applied photogrammetry; geological interpretation, both qualitative and quantitative of numerous aerial photographs from Canada and other countries; techniques used in base map preparation with and without control points; numerous exercises in photogeological mapping using stereoscopes and plotters. Lectures and laboratory. (Half course).

Geology N-353 (423). Field Geology

Prerequisite: Geology N-352. Two week field school in May; surface surveying methods; scope and organization of field work; students are requested to prepare a geological map, sections and reports based on field notes and aerial photographs. Group study of important outcrops; visits to local quarries and mines. (Half course).

Geology N-420 (223). Paleontology

The principles and methods of paleontology. Nature of fossils and the succession of life on earth. The study of ancient forms of life as seen in fossils: plants, invertebrates and vertebrates. The history, development and imperfection of this fossil record. Study of the various phyla and classes. The meaning and methods of evolution. Evolution as seen in fossils. Techniques for the collecting of fossils and preparation of illustrations. Examples of fossil occurrences and how they are used. Lectures and laboratory (Half course).

Geology N-421 (430). Geology of Canada

Prerequisite: Geology N-211. The study of the geology, physical features and mineral resources of the five main natural regions of Canada. A number of selected areas will be examined in detail. Lectures only. (Half course).

Geology N-460 (440). Economic Mineral Deposits

Prerequisites: Geology N-341 and N-351 previously or concurrently. A study of the nature, types of occurrences, origin and classification of

ore deposits, including the study of metallic and important non-metallic mineral deposits. Lectures and Laboratory. (Full course).

Geology N-461 (441). Applied Geophysics

Prerequisites: Geology N-211 and N-231. Principles of geophysical exploration. The various geophysical survey methods and techniques are studied, applied and interpreted; electrical, seismic, gravimetric and magnetic methods are used in problems of geological structures and for oil and mineral prospecting. Lectures and laboratory. (Half course).

Geology N-462 (442). Geochemistry

Prerequisites: Geology N-211 and N-231. Distribution and cycle of the main elements in the lithosphere, hydrosphere and atmosphere. Application of physical chemistry principles -- Age determination of rocks -- Isotope geology. Methods of geochemical prospecting and practical field cases are studied. Lectures only. (Half course).

MATHEMATICS

Victor Byers, *Professor of Mathematics, and Chairman of the Department.*
Frederick W. Bedford, *Professor of Mathematics, and Assistant Dean.*
Norman Edward Smith, *Professor of Mathematics.*
Charles Fox, *Visiting Professor of Mathematics.*
John McNamee, *Visiting Professor of Mathematics.*
Kailash K. Anand, *Associate Professor of Mathematics.*
Mary A. Brian, *Associate Professor of Mathematics.*
Martin Harrow, *Associate Professor of Mathematics.*
James C. Hayes, *Associate Professor of Mathematics.*
G.S. Lingappaiah, *Associate Professor of Mathematics.*
M. Malik, *Associate Professor of Mathematics.*
Eugen A. Pollitzer, *Associate Professor of Mathematics.*
John Senez, *Associate Professor of Mathematics.*
Jean C. Turgeon, *Associate Professor of Mathematics.*
Edna Vowles, *Associate Professors of Mathematics.*
Leonda S. Adler, *Assistant Professor of Mathematics.*
Morton M. Belinsky, *Assistant Professor of Mathematics.*
Josef Brody, *Assistant Professor of Mathematics.*
A. M. Chrysovergis, *Assistant Professor of Mathematics.*
Gerard E. Cohen, *Assistant Professor of Mathematics.*
Maurice Cohen, *Assistant Professor of Mathematics.*
T. Dwivedi, *Associate Professor of Mathematics.*
Abraham S. Fox, *Assistant Professor of Mathematics.*
N. Herscovics, *Assistant Professor of Mathematics.*
Joel Hillel, *Assistant Professor of Mathematics.*
Joan M. Negrepontis, *Assistant Professor of Mathematics.*
Harold W. Proppe, *Assistant Professor of Mathematics.*
Robert M. Raphael, *Assistant Professor of Mathematics.*
Manfred E. Szabo, *Associate Professor of Mathematics.*
Diana Y. Wei, *Assistant Professor of Mathematics.*
M. Zaki, *Assistant Professor of Mathematics.*
M. Alberta Boswall, *Sessional Lecturer in Mathematics.*
Alma N. Dobson, *Sessional Lecturer in Mathematics.*
Robert McConnell, *Sessional Lecturer in Mathematics.*

Mathematics N-201
Mathematics N-202
Mathematics N-203
Mathematics N-204
Mathematics N-205
Mathematics N-206
Mathematics N-207

Descriptions of the above courses are listed in the Faculty of Arts section of this announcement.

Mathematics N-241 (440). Introductory Mathematical and Applied Statistics

Prerequisite: Mathematics 005 or equivalent. The introductory mathematical theory of statistics including: the experimental approach to statistics, probability, distributions, moments and sampling theory, problems in estimation, hypothesis testing, correlation and regression. (Full course).

Mathematics N-261. Advanced Calculus

Prerequisites: Mathematics 004, 005. Methods of integration. Vector functions of a single variable, curves. Scalar functions of several variables, limits, continuity, partial derivatives, total differential. Vector functions of several variables, divergence, curl. Maxima and minima. Multiple integrals, change of variables. Line integrals, Green's theorem. Surface integrals, divergence theorem, Stoke's theorem. Applications. (Full course).

Mathematics N-270 (452). Differential Equations for the Natural Sciences

Prerequisite: Mathematics 005 or equivalent. First order first degree equations, linear equations, operators, Laplace transforms, series solutions and special functions, numerical methods, elementary partial equations, Fourier series. (Full course).

Note: – Only one full credit will be given for both N-270 and N-271*. Students credited with N-271* and N-371* may not take this course for credit.

Mathematics N-271. Differential Equations I

Prerequisites: Mathematics 004, 005; N-281 previously or concurrently. First order differential equations, applications of first order differential equations. Second order linear equations, series solutions of second order linear equations, higher order linear equations, system of equations. Difference equations. (Half course).

Mathematics N-281. Linear Algebra I

Prerequisites: Mathematics 002, 004 or equivalent. Vectors in R^n, matrices, linear equations, vector spaces, linear transformations, determinants, equivalence relations on matrices, characteristic values and vectors, diagonalization, metric concepts. (Full course).

Mathematics N-291. Algebraic Systems I

Prerequisites: Collegial pre-science mathematics profile or equiva-

lent. Sets, relations, mappings, integers, rational, real and complex number fields, elementary properties of groups, rings, integral domains, fields. (Half course).

Mathematics N-311. Numerical Analysis I

Prerequisite: Mathematics N-261 or equivalent. Introduction to computers and Fortran, solutions of equations, curve fitting, numerical differentiation and integration, matrix computation, errors. Lectures and laboratory. (Half course).

Mathematics N-312. Numerical Linear Algebra

Prerequisites: Mathematics N-281 or equivalent. Linear systems, matrix inversion, relaxation methods, method of least squares, G-inverses, canonical forms, determination of characteristic values, applications. (Half course).

Mathematics N-321. Mathematical Logic I

Prerequisite: three full post-collegial mathematics courses. Intuitive logic axiomatic set theory, ordinals, axiom of choice, cardinals. (Half course).

Mathematics N-322. Mathematical Logic II

Prerequisite: Mathematics N-321 or equivalent. First-order theories, models, incompleteness, selected topics. (Half course).

Mathematics N-331. Deterministic Methods of Operations Research

Prerequisite: Mathematics N-281 or equivalent. Formulation of mathematical models in the deterministic and probabilistic cases, methods of solution, testing the models. Applications to inventory, queuing, allocation (linear and dynamic programming, duality), competition (game theory), scheduling, networks and flow. Emphasis on mathematical methods, including Laplace and Z transforms, matrix algebra, search techniques, simulation. (Full course).

Mathematics N-341. Experimental Statistics

Prerequisite: Mathematics N-241 or equivalent. Experimental models. Regression and correlation, analysis of variance. Experimental designs. Randomized block, Latin squares, factorial confoundings. (Half course).

Mathematics N-342. Industrial Statistics

Prerequisite: Mathematics N-241 or equivalent. Concepts of statistical control, X, R, P and C charts. Acceptance sampling, sequential probability ratio tests, sampling inspection, continuous sampling plans, reliability and life tests. (Half course).

Mathematics N-343. Data Analysis and Survey Sampling

Prerequisite: Mathematics N-241 or equivalent. Basic concepts of sampling. Simple, stratified, systematic cluster sampling. Optimum allocation, ratio estimates. Curve fitting, Goodness-of-fit tests, non-

parametric tests, correlation and regression (bivariate and multivariate). Course time equally divided between theory and practical work. (Half course).

Mathematics N-351. Discrete Probability and Markov Chains

Prerequisite: Mathematics N-241. Axiomatic approach to probability theory, Bayes rule, occupancy, runs and matching problems. Discrete random variables and their distributions. Generating functions. Introduction to Markov chains and queues. (Half course).

Mathematics N-352. Mathematical Statistics

Prerequisites: Mathematics N-241, N-261. Introduction to multivariate distributions, sampling distributions, point and interval estimation, tests of hypothesis (parametric and non-parametric), regression models. (Half course).

Mathematics N-361. Real Analysis

Prerequisites: Mathematics N-261, N-281. Metric spaces, sequences and series, continuity, differentiation, Riemann integration, uniform convergence, equicontinuity, Weierstrass theorem. Differential forms, simplexes and chains, Stoke's theorem. (Full course).

Mathematics N-366. Complex Analysis I

Prerequisites: Mathematics N-261. Algebra and geometry of complex numbers, analytic functions, Cauchy-Riemann equations, Cauchy's integral formula, Taylor and Laurent's theorems, calculus of residues. (Half course).

Mathematics N-371. Differential Equations II

Prerequisites: Mathematics N-271, N-366. Equations of Hypergeometric type (Bessel and Legendre's equations). Laplace transform, inverse transform, applications to partial and integral equations. Fourier series. Boundary value problems and Sturm-Liouville theory. (Half course).

Mathematics N-381. Linear Algebra II

Prerequisites: Mathematics N-281, N-291. Matrices, linear transformation, determinants, metric concepts, inner product spaces, dual spaces, spectral theorem, bilinear and quadratic forms, canonical forms for linear transformation, matrix functions, selected topics. (Half course).

Mathematics N-391. Algebraic Systems II

Prerequisite: Mathematics N-291. Groups: permutation groups, Cayley theorem, cyclic groups, Lagrange theorem, normal subgroups, quotient groups, isomorphism theorems. Rings: ideal and quotient rings, isomorphism theorems, characteristic. Fields: construction of quotient fields. Polynomials: polynomial rings, division algorithm, g.c.d. unique factorization, roots of a polynomial over a field. Selected topics. (Half course).

Mathematics N-392. Elementary Number Theory

Prerequisites: three full post-collegial mathematics courses. Number systems, division and factorization, number-theoretic functions, con-

gruences, algebraic congruences and primitive roots, quadratic residues, diophantine equations. (Half course).

Mathematics N-431. Probabilistic Methods of Operations Research

Prerequisites: (a) Mathematics N-261; N-351 previously or concurrently; (b) Mathematics 440, 452. Difference and differential-difference equations, z transforms, stochastic distributions, Markov chains, queuing theory, inventory theory, reliability and renewal theory, competition and introduction to decision theory, dynamic programming, simulation and Monte Carlo techniques, formulation, testing and stability of mathematical models incorporating uncertainty. (Full course).

Mathematics N-432. Theory of Graphs and Networks

Prerequisite: Mathematics N-331. Directed and undirected graphs. Partitions, planar and nonplanar graphs, matrix representation, applications, network theory. (Half course).

Mathematics N-441. Seminar in Applied Statistics

Prerequisite: Permission of the department. Formulation of some real-life problems where applications of statistical methods can be exploited. Analysis, interpretation of data and inference of results. A report on a specific aspect of statistics may be required. (Half course).

Mathematics N-451. Topics in Probability

Prerequisites: Mathematics N-261; N-351 or permission of department. Axioms of probability space. Random variables. Distribution function, mathematical expectation. Law of large numbers. Limit theorems. Stochastic processes, Markov, Poisson and Gaussian Processes. (Half course).

Mathematics N-452. Linear Statistics

Prerequisites: Mathematics N-261, N-281, N-352. Multivariate normal distribution, distribution of quadratic forms. Linear models. General linear hypothesis of full rank. (Half course).

Mathematics N-461. Real Analysis II

Prerequisites: Mathematics N-361, N-391. Measure spaces, Lebesgue measure, measurable functions, Lebesgue integration, Lebesgue-Stieltjes integration. Function spaces, Ascoli-Arzela theorem, Stone-Weierstrass Hilbert spaces, Hahn-Banach theorem. (Full course).

Mathematics N-466. Complex Analysis II

Prerequisite: Mathematics N-366. Analytic functions, power series, Cauchy's theorem, Morera's and Liouville's theorems, singularities, maximum moduous principle, Rouche's theorem. Conformal mappings, linear transformations, analytic continuation. Special functions (Half course).

Mathematics N-467. Complex Analysis III

Prerequisite: Mathematics N-466. Normal families, Riemann Mapping

theorem, harmonic functions, elliptic functions, univalent functions, selected topics. (Half course).

Mathematics N-471. Partial Differential Equations

Prerequisite: Mathematics N-371 or equivalent. Classification of partial differential equations, the Cauchy-Kowalewski theorem, characteristics, boundary value and eigen-value problems for elliptic equations, initial value and initial boundary value problems for parabolic and hyperbolic equations. (Half course).

Mathematics N-475. Topology

Prerequisite: Permission of the Mathematics Department. Topologies and topological spaces, functions, mappings and homeomorphisms, connected spaces, compact spaces, hierarchy of topological spaces, metric spaces. (Half course).

Mathematics N-491. Abstract Algebra I

Prerequisite: Mathematics N-391. Groups: composition series, direct product of groups, abelian groups, Sylow's theorems, solvable groups. Rings: Euclidean rings, unique factorization domains, principal ideal domains. Maximal, prime and primary ideals; ideals in noetherian rings, modules and vector spaces. Algebras' Selected topics. (Half course).

Mathematics N-492. Abstract Algebra II

Prerequisite: Mathematics N-491. Fields: prime fields. Algebraic, finite, simple, separable, inseparable, normal extensions. Finite fields. Perfect and imperfect fields. Group characters. Galois theory; the fundamental theorem, solvability by radicals, transcendental extensions. (Half course).

PHYSICS

Walter R. Raudorf, *Professor of Physics, and Chairman of the Department.*
David E. Charlton, *Associate Professor of Physics.*
Sushil K. Misra, *Associate Professor of Physics.*
Stanley P. Morris, *Associate Professor of Physics.*
Jean-Pierre Pétolas, *Associate Professor of Physics.*
Ramesh C. Sharma, *Associate Professor of Physics.*
Adolph E. Smith, *Associate Professor of Physics.*
Nelson Eddy, *Assistant Professor of Physics.*
Barry Frank, *Assistant Professor of Physics.*
Arlin L. Kipling, *Associate Professor of Physics.*
John A. MacKinnon, *Assistant Professor of Physics.*
Francisco Tomas, *Director of Physics Laboratories.*

Physics N-210 (210)

This course is intended primarily for Arts students. It traces the fundamental ideas of modern physics and their historical development

by a descriptive and reflective study of the most telling discoveries in modern physics. (Full course).

NOTE: – Science students or students who have credit for Physics 010 may not take this course for credit.

References: Beiser: *World of Physics*. Dampier & Dampier: *Readings in Literature of Science.*

Physics N-242 (440, 442). Classical Mechanics

Prerequisite: Mathematics N-261 previously or concurrently. Laws of classical mechanics, statics, kinematics, dynamics of a particle, moving reference frames, central forces, dynamics of a system of particles, dynamics of rigid bodies in a plane, Lagrange's equations. Lectures and laboratory. (Full course).

Reference: G.R. Fowles: *Analytical Mechanics* (Holt, Rinehart and Winston, 1962).

Physics N-252 (452). Electrodynamics

Prerequisite: Mathematics N-261 previously or concurrently. Electric forces and electric fields, electric potential, capacitance, dielectric theory and behavior, direct currents, resistance, thermoelectricity, moving charges and magnetic fields, electromagnetic induction, the magnetic properties of matter, galvanometers, transient currents, Maxwell's equations and electromagnetic waves. Lectures and laboratory. (Full course).

Reference: H.E. Duckworth: *Electricity and Magnetism* (Holt, Rinehart and Winston, 1960).

Physics N-336 (471). Methods of Theoretical Physics

Prerequisites: Mathematics N-261, N-270, and N-281; Mathematics N-366 previously or concurrently; Physics N-242 and N-252. Tensor calculus: tensor algebra, line element, covariant differentiation. Sturm-Liouville Theory: stretched string, review of Fourier series, applications of Fourier series, Fourier integrals, vibrating membrane, operators, method of eigenfunction expansions, cylindrical functions, spherical harmonics, perturbation theory for S.L. problem. Group theory: symmetry considerations, definitions, theory of matrix representations, applications. (Full course).

References: D.F. Lawden: *An Introduction to Tensor Calculus and Relativity* (Methuen, 1962); I. Schensted: *Application of Group Theory to Quantum Mechanics* (Neo Press, 1965); R.E. Collins: *Mathematical Methods for Physicists and Engineers* (Reinhold, 1968); E. Butkov: *Mathematical Physics* (Addison-Wesley, 1968).

Physics N-345 (441). Advanced Classical Mechanics and Relativity

Prerequisites: Physics N-242; Mathematics N-270 previously or concurrently. Variational principles and Lagrange's equations, kinematics of rigid body motion, rigid body motion, Hamilton's equations of motion, Canonical transformations, Hamilton-Jacobi theory, small oscillations, special relativity, mechanics of deformable bodies. (Full course).

Reference: H. Goldstein: *Classical Mechanics* (Addison-Wesley, 1950).

Physics N-353 (222). Optics

Prerequisites: Mathematics N-261 and Physics N-252. Geometrical optics: Plane surfaces, spherical surfaces, optical instruments. Wave optics: Review of simple harmonic motion, wave equation, superposition of waves, electromagnetic waves, scattering, polarization, interference - coherent sources, interference - uniform extended sources, Fresnel diffraction, waves in a dispersive medium, lasers. Lectures and laboratory. (Half course).

References: E.A. Jenkins, H.E. White: *Fundamentals of Optics* (McGraw-Hill, 1957); D.H. Towne: *Wave Phenomena* (Addison-Wesley, 1967); R.H. Webb: *Elementary Wave Optics* (Academic Press, 1969).

Physics N-354 (453). Electronics

Prerequisite: Physics N-252. Introductory concepts, AC circuit theory, electrical measuring instruments, tube theory, triode amplifier, RC coupled pentode amplifier, transformer coupled amplifier, transistor theory, modern signal processing techniques for optimal signal to noise ratios, amplifiers, oscillators, pulse and switching circuits, additional electronic devices. Lectures and laboratory. (Full course).

References: J.J. Brophy: *Basic Electronics for Scientists* (McGraw-Hill, 1966), U.S. Department of the Army: *Basic Theory and Application of Transistors* (Dover, 1963).

Physics N-365 (Half of 461). Atomic Physics

Prerequisites: Mathematics N-261; Physics N-242 and N-252. Kinetic theory, origin of quantum theory, electrons and ions, electromagnetic radiation, the Rutherford atom, the Bohr atom, quantum mechanics, atomic structure, molecules and solids. Lectures and laboratory. (Half course).

References: F.K. Richtmyer, E.H. Kennard, J.N. Cooper: *Introduction of Modern Physics* (McGraw-Hill, 1969); C.H. Blanchard, C.R. Burnett, R.G. Stoner, R.L. Weber: *Introduction to Modern Physics* (Prentice Hall, 1969); R.T. Weidner, R.L. Sells: *Elementary Modern Physics* (Allyn and Bacon, 1968).

Physics N-434 (232). Thermodynamics

Prerequisites: Mathematics N-261, N-270; Physics N-242. Temperature, simple thermodynamic systems, work, heat and first law, ideal gases, kinetic theory, heat engines, reversible and irreversible processes, entropy, thermodynamic potentials. Lectures and laboratory. (Half course).

Reference: M.W. Zemansky: *Heat and Thermodynamics* (McGraw-Hill, 1968).

Physics N-435. Statistical Physics

Prerequisite: Physics N-434. Basic probability concepts, statistical

description of systems of particles, thermal interaction, microscopic theory and macroscopic measurements, Canonical distribution in the classical approximation, general thermodynamic interaction, elementary kinetic theory of transport processes. (Half course).

References: F. Reif: *Fundamentals of Statistical and Thermal Physics*. (McGraw-Hill, 1965); E. Reil: *Statistical Physics* (McGraw-Hill, 1967); P.M. Morse: *Thermal Physics* (Benjamin, 1969).

Physics N-457 (451). Advanced Electrodynamics

Prerequisite: Physics N-336. Fundamentals of electromagnetics, multipole fields, the equations of Laplace and Poisson, the electromagnetic field equations, electromagnetic waves, reflection and refraction, the Lienard-Wiechert potentials and radiation, radiating systems, classical electron theory, relativistic electrodynamics. (Full course).

References: J.D. Jackson: *Classical Electrodynamics* (Wiley, 1962); J.B. Marion: *Classical Electromagnetic Radiation* (Academic Press, 1965; P. Lorrain, D. Corson: *Electromagnetic Fields and Waves* (Freeman, 1970; J.R. Reitz, F.J. Milford: *Foundations of Electromagnetic Theory* (Addison-Wesley, 1960).

Physics N-466 (Half of 461). Nuclear Physics

Prerequisite: Physics N-365. Discussion of nuclear properties, deuteron, scattering, nuclear models, nuclear disintegrations, nuclear reactions, elementary particles and cosmic rays. Lectures and laboratory. (Half course).

References: H. Enge: *Introduction to Nuclear Physics* (Addison-Wesley, 1966); A.P. Ayra: *Fundamentals of Nuclear Physics* (Allyn and Bacon, 1966); D. Halliday: *Introductory Nuclear Physics* (Wiley, 1955); C.M.H. Smith: *A Textbook of Nuclear Physics* (Pergamon, 1966).

Physics N-467. Solid State Physics

Prerequisite: Physics N-477. Crystal structure, crystal binding, phonons and lattice vibrations, free electron fermi gas, energy bands, semiconductor crystals, superconductivity, dielectric properties, survey of magnetic properties, magnetic resonance, optical phenomena in insulators. (Half course).

Reference: C. Kittel: *Introduction to Solid State Physics* (Wiley, 1966).

Physics N-477 (Half of 472). Quantum Mechanics I

Prerequisites: Physics N-336, N-345 and N-365. State functions and their interpretation, linear momentum, motion of a free particle, Schrodinger's equation. (Half course).

References: D.S. Saxon: *Elementary Quantum Mechanics* (Holden-Day, 1968); D.A. Park: *Introduction to the Quantum Theory* (McCraw-Hill, 1964).

Physics N-478 (Half of 472). Quantum Mechanics II

Prerequisite: Physics N-477. States of a particle in one dimension, approximation methods, systems of particles in one dimension, motion in three dimensions, angular momentum and spin. (Half course).

References: D.S. Saxon: *Elementary Quantum Mechanics* (Holden-Day, 1968); D.A. Park: *Introduction to the Quantum Theory* (McGraw-Hill, 1964).

Physics N-481 (481). Biophysics

Prerequisites: Chemistry N-231 and one course in Biological Sciences. Topics treated will include the biophysical view of the cell, energy relations in the cell, action of ionizing radiation, biophysics of muscle and nerve. (Half course).

Reference: J.L. Oncley: *Biophysical Science* (Wiley, 1959).

Physics N-496 (491). Methods of Experimental Physics

Prerequisites: Physics N-354 and N-365. Experiments from the fields of atomic physics, solid state physics and nuclear physics. Experiments which teach the basic principles of digital logic. Laboratory only. (Full course).

PSYCHOLOGY

The courses in Psychology listed below are acceptable as Science credits in the Bachelor of Science degree. Course descriptions can be found in the Faculty of Arts Section.

Psychology N-241 Statistical Methods in Psychology A
Psychology N-242 Statistical Methods in Psychology B
Psychology N-271 Experimental Psychology 1A
Psychology N-273 Experimental Psychology 1B
Psychology N-275 Directed Study and Research on a Selected Topic
Psychology N-461 Physiological Psychology
Psychology N-462 Comparative Psychology
Psychology N-471 Experimental Psychology II
Psychology N-472 Advanced Experimental Problems

VII
faculty of
commerce &
administration

FACULTY OF COMMERCE & ADMINISTRATION   MAJOR PROGRAMMES

Accountancy 1st term	2nd term	Economics 1st term	2nd term	Finance 1st term	2nd term	General Business 1st term	2nd term	Management 1st term	2nd term	Marketing 1st term	2nd term	Quantitative Methods 1st term	2nd term
FIRST YEAR						**FIRST YEAR**							
Acct. N-213	Acct. N-214	Acct. N-213	Acct. N-214	Acct. N-213	Acct. N-214	Acct. N-213	Acct. N-214	Acct. N-213	Acct. N-214	Acct. N-213	Acct. N-214	Acct. N-213	Acct. N-214
Acct. N-215	Acct. N-216	Acct. N-215	Acct. N-216	Acct. N-215	Acct. N-216	Acct. N-215	Acct. N-216	Acct. N-215	Acct. N-216	Acct. N-215	Acct. N-216	Acct. N-215	Acct. N-216
Q.M. N-243	Q.M. N-244	Q.M. N-243	Q.M. N-244	Q.M. N-243	Q.M. N-244	Q.M. N-243	Q.M. N-244	Q.M. N-243	Q.M. N-244	Q.M. N-243	Q.M. N-244	Q.M. N-243	Q.M. N-244
Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212	Econ. N-211 or N-212
Man. N-213	Man. N-214	Man. N-213	Man. N-214	Man. N-213	Man. N-214	Man. N-213	Man. N-214	Man. N-213	Man. N-214	Man. N-213	Man. N-214	Man. N-213	Man. N-214
Comp. Sc. N-211	Man. N-215	Comp. Sc. N-211	Man. N-215	Comp. Sc. N-211	Man. N-215	Comp. Sc N-211	Man. N-215	Comp. Sc. N-211	Man. N-215	Comp. Sc. N-211	Man. N-215	Comp. Sc. N-211	Man. N-215
SECOND YEAR						**SECOND YEAR**							
Man. N-340	Man. N-341	Man. N-340	Man. N-341	Man. N-340	Man. N-341	Man. N-340	Man. N-341	Man. N-340	Man. N-341	Man. N-340	Man. N-341	Man. N-340	Man. N-341
Q.M. N-313	Q.M. N-314	Q.M. N-313	Q.M. N-314	Q.M. N-313	Q.M. N-314	Q.M. N-313	Q.M. N-314	Q.M. N-313	Q.M. N-314	Q.M. N-313	Q.M. N-314	Q.M. N-313	Q.M. N-314
Fin. N-314	Fin. N-315	Fin. N-314	Fin. N-315	Fin. N-314	Fin. N-315	Fin. N-314	Fin. N-315	Fin. N-314	Fin. N-315	Fin. N-314	Fin. N-315	Fin. N-314	Fin. N-315
Mark. N-301	Mark. N-350	Mark. N-301	Mark. N-350	Mark. N-301	Mark. N-350	Mark. N-301	Mark. N-350	Mark. N-301	Mark. 350	Mark. N-301	Mark. N-350	Mark. N-301	Mark. N-350
Man. N-345	Man. N-346	Man. N-345	Man. N-346	Man. N-345	Man. N-346	Man. N-345	Man. N-346	Man. N-345	Man. N-346	Man. N-345	Man. N-346	Man. N-345	Man. N-346
Acct. N-313	Acct. N-314	Econ. N-311 or N-312	Econ. N-311 or N-312	Econ. Elect.	Econ. Elect.	Elect.	Elect.	Man. N-368	Man. N-369	Elect.	Mark. N-352	Q.M. N-353	Q.M. N-354
THIRD YEAR						**THIRD YEAR**						**THIRD YR.**	
Man. N-460	Man. N-461	Man. N-460	Man. N-461	Man. N-460	Man. N-461	Man. N-460	Man. N-461	Man. N-460	Man. N-461	Man. N-460	Man. N-461	Man. N-460	Man. N-461
Man. N-475	Man. N-476	Man. N-475	Man. N-476	Man. N-475	Man. N-476	Man. N-475	Man. N-476	Man. N-475	Man. N-476	Man. N-475	Man. N-476	Man. N-475	Man. N-476
Acct. N-441	Acct. N-421	Econ. N-316 or N-318 (3)	Econ. N-316 or N-318	Fin. Elect.	Fin. Elect.	Elect.	Elect.	Man. N-466	Man. N-467	Mark. Elect. (5)	Mark. Elect.	Q.M. N-425	Q.M. Elect.
Acct. N-432	Acct. N-433	Econ. Hist. (1)	Econ. Hist.	Fin. Elect.	Fin. Elect.	Elect.	Elect.	Man. Elect.	Man. Elect.	Mark. Elect.	Mark. N-490	Q.M. Elect.	Q.M. Elect.
Elect.	Elect.	Econ. Elect. (4)	Econ. Elect.	Elect.	Elect.	Elect.	Elect.	Elect.	Elect.	Mark. Elect.	Elect.	Elect.	Elect.
TOTAL COURSES FOR MAJOR (2) 34		34		34		34		34		34		34	

(1) One of Econ. N-330, N-430, N-434 or N-438.
(2) Honours students must complete two additional courses (total of 36)
(3) Honours students in Economics must take Economics N-415.
(4) Honours students in Economics must take Economics N-318.
(5) Honours students in Marketing must take Marketing N-402 and N-403.
(6) Honours students must obtain Department approval for selection of elective courses.

FACULTY OF COMMERCE & ADMINISTRATION

Gunther Brink, *Dean*
Henry S. Tutsch, *Assistant Dean.*

ADMISSION REQUIREMENTS

General admission requirements are listed on page 46.

Specific requirement for admission to the Faculty of Commerce & Administration are as follows:

The official requirements for students in CEGEP is two *semester* courses in Mathematics (unspecified.) It was the intention of the Faculties of Commerce of English-language universities to require two *full* courses, to include Calculus, in the belief that this requirement was to be incorporated in the CEGEP profile (thus bringing the Mathematical requirements into line with those established by the French-language universities.) Students in the Sir George Williams Collegial Programme have been required to take at least four semester courses in Mathematics. Since CEGEP students were apparently not made aware of this heavier requirement, the official requirement of two semester courses (unspecified) is being accepted for students seeking admission to the University undergraduate programme in Commerce & Administration *for 1971-72 only*. Arrangements will be made in the 1971-72 first-year programme to give special instruction for those students lacking adequate Mathematical preparation.

Philosophy of the Commerce Programme

This Faculty is engaged in the education of students for business life. It is our intention to graduate students liberally educated about business. To accomplish this we have designed a multi-disciplinary and inter-disciplinary curriculum which is intellectually challenging.

The first year of the programme is intended to provide an informative accumulation of operational attitudes, skills and tools which form the base for the core concentration.

The core concentration in the second year attempts to give broad experience in all phases of business in a co-ordinated, analytical and reflective period of study. All the resources of the student's intellectual ability are combined with his inter-disciplinary studies to analyse, formulate, judge, and solve challenging business situations.

The last year of the programme is intended to provide the student with an opportunity to immerse himself in an area of specialized study. In addition, the student participates in a course which is designed to test his ability to integrate his knowledge and to view the study of business as a whole.

In view of this design all students must follow the sequence of courses on the basis of an academic year as outlined in the Curriculum. No student will be permitted to register for 2nd or 3rd year courses without having completed the courses of the first academic year. Exceptions may be authorized in writing for valid reasons by the Dean or the Assistant Dean.

DEGREE REQUIREMENTS

To obtain the degree of Bachelor of Commerce, all students are required to follow either a major or an honours programme. Thirty-four half-courses are required for a major, thirty-six for honours. Major and honours programmes are available in each of the following areas:

Accountancy
Economics
Finance
General Business
Management
Marketing
Quantitative Methods

To graduate with a major requires successful completion of all prescribed courses, while graduation with honours requires, in addition, a high level of academic performance. The regulations governing qualifications for an honours degree are given below.

Students will indicate their preferred field of concentration, either major or honours, at the time of application for entry. It should be noted, however, that since the programme of study of the first year is common to all programmes, students may change to another programme, provided, of course, that the capacity of the programme permits it.

The preceding tables give complete details of the requirements of each programme.

HONOURS PROGRAMME

The University has approved programmes leading to an Honours degree in certain selected fields. An Honours degree indicates specia-

lization within a field and high academic standing. In order to qualify for an Honours degree a student must meet all of the academic qualifications and comply with the regulations set forth below.

1. A candidate for an Honours degree should indicate such intention at registration, and consult the Honours representative of the department(s) concerned as soon as possible. His honours standing will be reviewed annually. However, a student who has followed the courses prescribed for the Honours programme, and has met all the requirements may enter the programme, with the approval of the Department Chairman at any time before beginning the final year. No retroactive approval of entry may be granted.

2. An Honours student must meet the general degree requirements as well as the specific requirements for an Honours degree, and must obtain at least a 'C' average over the total degree programme. Failure in any course will mean suspension from the Honours programme. Reinstatement is possible only by recommendation by the Honours representative.

3. An Honours student must obtain a 'B' average with no grade lower than 'C' in all courses in the basic Honours programme.

4. A student who enters with advanced standing may apply pro tanto credits, which are applicable, to the Honours degree requirements, upon approval by the Department.

5. A student shall be allowed to qualify for only one Honours degree.

6. Honours standing in any programme is granted upon graduation only with the approval of the University Council.

Avenues To A Business Career

There are several ways a student may choose to prepare for a career in business:

1. a Bachelor's Commerce degree in with a major in a department, in Economics, or in General business;

2. a Bachelor's degree in Arts or Science, general programme or major in Economics and / or Mathematics;

3. a Bachelor's degree in Engineering.

After some working experience an M.B.A. programme will be desirable, especially following an Arts, Science or Engineering degree.

French Language

The business community, as well as governments, now express a preference for university graduates who are bilingual. We, therefore, advise all students to take advantage of the opportunities available during their years at this University to ensure that they are bilingual when they present themselves for employment upon graduation.

The Institute of Chartered Accountants

A graduate of Sir George Williams University holding the Bachelor of Commerce degree (Major or Honours in Accountancy) may register as an apprentice with the Institute of Chartered Accountants of Quebec and may apply for exemptions based on academic achievement.

Undergraduate Commerce Degree and School of Retailing Diploma

Undergraduates who wish to receive the Bachelor of Commerce degree and the School of Retailing Diploma must follow the Major in Marketing curriculum, choosing Marketing N-463 as an elective. The student must also work two full years in retailing before becoming eligible for the retail Diploma. Applications for the Diploma should be accompanied by documentary evidence of the applicant's in-store progress and addressed to the Director of the School, who will award the Diploma if he is satisfied that the applicant has obtained sufficient and relevant retail experience.

Please note that the School of Retailing also offers a two-year day programme leading to the Diploma in Retailing only. Applications should be made to the Director of the School of Retailing for this latter programme.

COURSES

Notice To Non-Commerce Students

Students not registered in the Faculty of Commerce & Administration, who wish to undertake any courses offered by the Facuwty, but do not have the stated prerequisites, must obtain permission in writing from the Chairman of the Department concerned, *prior to registration.*

ACCOUNTANCY

James G. Finnie, *Professor of Accountancy, and Chairman of the Department.*
Harvey Mann, *Associate Professor of Accountancy.*
Adam Dickie, *Assistant Professor of Accountancy.*
Frank P. Dougherty, *Assistant Professor of Accountancy*
E. Brian Markland, *Assistant Professor of Accountancy.*
Wolfram E. Pietzsch, *Assistant Professor of Accountancy.*

Accountancy N-213. Financial I

This course is an introduction to the modern procedures used in the provision of financial information about an economic entity, usually a business enterprise, taking into consideration the needs of the users of the information. The course covers the fundamental principles involved in the preparation of reports and statements. (Half course).

NOTE: – Students who have credit for Accountancy 211 may not take this course for credit.

Accountancy N-214. Financial II

Prerequisite: Accountancy N-213 or equivalent.
This course continues the study of the material in Accountancy N-213. (Half course).

NOTE: – Students who have credit for Accountancy 211 may not take this course for credit.

Accountancy N-215. Managerial I

Prerequisite: Accountancy N-213 previously or concurrently.
This course is an introduction to the principles governing the use of accounting information by management in making decisions for planning and control. (Half course).

NOTE: – Students who have credit for Management 411 or Finance 416 may not take this course for credit.

Accountancy N-216. Managerial II

Prerequisite: Accountancy N-215 or equivalent.
This course continues the study of the material in Accountancy N-215. (Half course).

NOTE: – Students who have credit for Management 411 or Finance 416 may not take this course for credit.

Accountancy N-313. Intermediate

Prerequisites: Accountancy N-214 and N-216, or equivalent.
This is a course continuing at a more advanced level, integrating the first year work with more advanced theory and application, with emphasis on analytic method and interpretative processes, and relating particularly to procedural development while giving consideration to the requirements of the companies acts. (Half course).

NOTE: – Students who have credit for Accountancy 411 may not take this course for credit.

Accountancy N-314. Advanced

Prerequisite: Accountancy 313 or equivalent.
This is an advanced course covering the formation and maintenance, the expansion and contraction, and the liquidation of business organizations, including partnerships, limited companies, estates and trusts. (Half course).

NOTE: – Students who have credit for Accountancy 412 may not take this course for credit.

Accountancy N-421. Cost Accounting (Introductory)

Prerequisites: Accountancy N-214 and N-216 or equivalent.
This course provides a knowledge of the fundamentals of cost accounting together with the latest procedures and cost accounting systems. (Half course).

NOTE: – Students who have credit for Accountancy 421 may not take this course for credit.

Accountancy N-422. Cost Accounting (Advanced)

Prerequisite: Accountancy N-421 or equivalent.
This course continues at an advanced level the study of modern cost accounting systems, and emphasizes the contemporary problems facing cost accountants, and their potential solution by the use of sophisticated techniques. (Half course).

NOTE: - Students who have credit for Accountancy 422 may not take this course for credit.

Accountancy N-432. Auditing (Introductory)

Prerequisite: Accountancy N-314 or equivalent.
This course involves the study of the principles underlying the practice of auditing. The types of audits and examinations, the qualification of an auditor, and the use of working papers and audit programmes are also considered, together with the procedures for auditing business transactions. (Half course).

NOTE: – Students who have credit for Accountancy 431 may not take this course for credit.

Accountancy N-433. Auditing and Investigations

Prerequisite: Accountancy N-432 or equivalent.
This course involves the study of the legal duties and responsibilities of auditors and auditors' reports and certificates. Types of investigations are also studied. (Half course).

NOTE: – Students who have credit for Accountancy 431 may not take this course for credit.

Accountancy N-441. Taxation

Prerequisites: Accountancy N-214 and N-216 or equivalent.
This course is designed to give authentic and up-to-date information on one of the major factors in business today. Topics covered include

company and personal income taxes and a survey of sales taxes, estate taxes and succession duties and other levies. (Half course).

NOTE: — Students who have credit for Commercial Law 441 may not take this course for credit.

Accountancy N-451. Machine Accounting

Prerequisite: Accountancy N-214 or N-216 or equivalent.

This course is an introduction to data processing concepts and their application in the production of accounting and statistical information for business management. (Half course).

NOTE: — Students who have credit for Accountancy 451 may not take this course for credit.

FINANCE

C.C. Potter, *Professor of Finance, and Chairman of the Department.*
G. Robert Curnew, *Associate Professor of Finance.*
Michael Kawaja, *Associate Professor of Finance.*
Terence Brown, *Assistant Professor of Finance.*
John P. Castle, *Assistant Professor of Finance.*
John Fisher, *Special Lecturer.*
Wm. T.G. Hackett, *Special Lecturer.*

Finance N-314. Business Finance I

Prerequisites: Economics N-211 or N-212, Accountancy N-214 and N-216.

The Finance function: its setting and its relation to management planning and control of investment in current and fixed assets. (Half course).

NOTE: — Students who have credit for Finance 413 may not take this course for credit.

Finance N-315. Business Finance II

Prerequisite: Finance N-314.

The Finance function: the supply of funds; the analysis of the distribution of risk, income, control and taxation that the obligations involve, and the relation of liquidity preference and such obligations. (Half course).

NOTE: — Students who have credit for Finance 413 may not take this course for credit.

Finance N-417. Capital Budgeting Theory

Prerequisite: Finance N-315.

An examination of the criteria for efficient investments and optimum financial budgeting. (Half course).

NOTE: — Students who have credit for Finance 416 may not take this course for credit.

Finance N-418. Cost/Benefit Analysis

Prerequisite: Finance N-315

Private and public resource investment and associated problems. (Half course).

NOTE: — Students who have credit for Finance 416 may not take this course for credit.

Finance N-430. Financial Management I

Prerequisite: Finance N-315.

A study of the role and responsibility of the senior financial officer in the achievement of 'current control' through operational finance. A variety of case studies is used to encourage the student to develop a critical approach to the subject. (Half course).

NOTE: — Students who have credit for Finance 424 may not take this course for credit.

Finance N-431. Financial Management II

Prerequisite: Finance N-315 and N-430.

A study of the role and responsibility of the senior financial officer in the achievement of 'current control' and 'performance review' through operational finance, etc. (Half course).

NOTE: — Students who have credit for Finance 424 may not take this course for credit.

Finance N-440. Finance Theory I

Prerequisite: Finance N-315.

This course will be a study of asset and liability management under conditions of uncertainty. Topics included are: concept of finance, capital and interest, theory of risk and time preferences, capitalization of the income stream, corporate growth and rate of return and capital structure mix. (Half course).

NOTE: — Students who have credit for Finance 423 or 426 may not take this course for credit.

Finance N-441. Finance Theory II

Prerequisite: Finance N-315 and N-440.

This course will be a continuation of Finance N-440 covering such topics as: dividends and the value of the corporation, cost of capital, game theory and liquidity. (Half course).

NOTE: — Students who have credit for Finance 423 or 426 may not take this course for credit.

Finance N-450. Investment Analysis

Prerequisite: Finance N-315.

The examination of the workings of security markets and analytical techniques for the valuation of securities and the appraisal of portfolio management. (Half course).

NOTE: — Students who have credit for Finance 423 or 427 may not take this course for credit.

Finance N-455. Seminar in Finance

Prerequisite: Finance N-315.

This course is intended primarily for Honours or Major students and provides an opportunity for more intensive study in one or more specific topics in Finance. The topic will vary according to the special interests of the professor and the students. (Half course).

NOTE: — Students who have credit for Finance 427 may not take this course for credit.

Finance N-460. Financial Intermediaries (National)

Prerequisites: Finance N-315.

Principles of money and credit in their application to the operations of the central bank, chartered banks, and the financial system and markets generally. (Half course).

NOTE: — Students who have credit for Finance 429 may not take this course for credit.

Finance N-461. Financial Intermediaries (Quebec)

Prerequisites: Finance N-315 and N-460.

A study of the operation of financial institutions in the province of Quebec (Half course).

NOTE: — Students who have credit for Finance 429 may not take this course for credit.

MANAGEMENT

Joseph Kelly, *Professor of Management, and Chairman of the Department.*
Gunther Brink, *Professor of Management.*
John Smola, *Professor of Management.*
George Bozoki, *Associate Professor of Management.*
Hem C. Jain, *Associate Professor of Management.*
Thomas Kubicek, *Associate Professor of Management.*
Albert Tari, *Associate Professor of Management.*
Charles E. Smith, *Visiting Associate Professor of Management.*
Martin Franklin, *Assistant Professor of Management.*
Robert Hosein, *Assistant Professor of Management.*
Peter E. Pitsiladis, *Assistant Professor of Management.*
Henry Tutsch, *Assistant Professor of Management.*
Fernando Bartolome-Pardo, *Visiting Assistant Professor of Management.*
John R. Goodwin, *Visiting Assistant Professor of Management.*

Management N-213. Foundations of Behaviour I

The purpose of this course is to introduce the student to psychological concepts relevant to the study of organizational problems. Topics include: personality, interpersonal behaviour, group behaviour, perception, attitudes and motivation. (Half course).

NOTE: — Students who have credit for Psychology 011 or 211 may not take this course for credit.

Management N-214. Foundations of Behaviour II

The purpose of this course is to introduce the student to sociological concepts relevant to the study of organizational problems. The chief concepts to be studied are: role, status, intergroup behaviour, social institutions and culture. (Half course).

NOTE: — Students who have credit for Sociology 011 or 211 may not take this course for credit.

Management N-215. Research Methodology

This course attempts to give the student an awareness and understanding of the possibilities and limitations of using research methods in a business setting. Topics to be discussed include: the scientific method, experimental design, observational techniques, sources of information and writing the research report. (Half course).

Management N-340. Organizational Behaviour I

Prerequisites: Management N-213 and N-214.

The general purpose of Organizational Behaviour I and II is to provide the student with the opportunity to use the concepts, findings and techniques of previous behaviour courses as a basis to study organizations as socio-technical systems.

This is a laboratory course in which students are expected to improve their perceptual, analytical and problem solving skills. There are three goals:

a) to gain an understanding of group processes through role playing and sensitivity training;

b) to practice diagnosing organizational problems through analysis of cases;

c) to acquire skill in using diagnosis to plan and influence organizational changes.

(Half course).

NOTE: — Students who have credit for Management 430 may not take this course for credit.

Management N-341. Organizational Behaviour II

Prerequisite: Management N-340.

This course will concentrate on the treatment of an organization as a socio-technical system. The central theme will be the measurement of organizational effectiveness and its dysfunctions. (Half course).

NOTE: — Students who have credit for Management 430 may not take this course for credit.

Management N-345. Production Management

Prerequisite: Quantitative Methods N-244.

The problems of design, selection and planning of operating systems are studied. Operating systems are broadly defined to include manufacturing

as well as service organizations. Topics included are: Forecasting, Plant and Warehouse Location, Facility Location and Maintenance. (Half course).

NOTE: – Students who have credit for Management 421 may not take this course for credit.

Management N-346. Scheduling and Control of Production Systems

Prerequisite: Management N-345.

Operational problems of operating systems are studied. Topics included are: inventory management, scheduling of intermittent and continuous production, production line balancing, quality control, project management. (Half course).

NOTE: – Students who have credit for Management 421 may not take this course for credit.

Management N-368. Social Aspects of Enterprise

Prerequisite: Third year standing in any faculty.

The purpose of this course is to facilitate understanding of the impact of social, economic, political and ethical environment on the process of managerial decision-making. Consideration is given to the conceptual foundations of Business including the Business Corporation, its function and the legitimacy of its power structure. (Half course).

NOTE: – Students who have credit for Management 451 may not take this course for credit.

Management N-369. Canadian Business and its Environment

Prerequisite: Management N-368.

The purpose of this course is to examine the functioning of Canadian Business and its relationships with its public, including stock-holders, consumers, employees, labour, community and government. Major contemporary issues such as the impact of technology on people and the physical environment are examined. (Half course).

NOTE: – Students who have credit for Management 451 may not take this course for credit.

Management N-460. Business Policy I

Prerequisites: Finance N-315, Marketing N-301, Management N-341 and N-346.

This course, together with Business Policy II, is a terminal course designed to integrate the learning of the three-year programme. The emphasis will be on the process by which top management defines products, designates markets, and market segments together with the channels through which they are to be resolved, determines the means by which they are to be reached, and the means by which operations are to be financed, as well as the size and kind of organization which is to achieve these activities - the process of strategy formulation by the organization. The purpose of instruction is to develop in students a global view of the organization rather than a specialist, departmental orientation. Cases will be used extensively, and drawn from widely diversified industries. (Half course).

NOTE: – Students who have credit for Management 453 may not take this course for credit.

Management N-461. Business Policy II

Prerequisite: Management N-460.

This course will concentrate on how the strategy formulated in Business Policy I will be implemented by the organization. Organization structures will be studied in differing environments. The relationships between organization structures and the organization's strategy will be analyzed. The problems encountered by general managers, as well as middle managers, in the process of the implementation of the set policies will be studied. (Half course).

NOTE: – Students who have credit for Management 453 may not take this course for credit.

Management N-462. Personnel Management I

Prerequisite: Management N-341.

The aim of this course is to provide a sound background in fundamentals, theory, principles and practice of personnel management. It will focus on the philosophies underlying current personnel policy and practices. (Half course).

NOTE: – Students who have credit for Management 432 may not take this course for credit.

Management N-463. Personnel Management II

Prerequisite: Management N-462.

The emphasis in this course will be on techniques: recruitment, selection, training, appraisal, and wage and salary administration. (Half course).

NOTE: – Students who have credit for Management 432 may not take this course for credit.

Management N-464. Labour and Industrial Relations I

Prerequisite: Management N-340 and N-341.

Labour relations is a survey course designed to provide a practical and comprehensive approach to the state of labour-management relations in Canada. (Half course).

NOTE: – Students who have credit for Management 433 may not take this course for credit.

Management N-465. Collective Bargaining and Industrial Relations II

Prerequisite: Management N-464.

This course is designed to help the student to look at day-to-day problems connected with negotiation and administration of collective bargaining agreements. The course puts some stress on the behavioural aspects of industrial relations. (Half course).

NOTE: – Students who have credit for Management 433 may not take this course for credit.

Management N-466. Management Theory I

Prerequisite: Management N-340 and N-341.

This is an introductory course in management theory in which the stu-

dent will be expected to become thoroughly familiar with management literature, terminology and principles. To this end he will examine the classical, contemporary and emerging theories in order to establish a solid conceptual framework against which management problems and their solutions can be evaluated. (Half course).

NOTE: — Students who have credit for Management 452 may not take this course for credit.

Management N-467. Management Theory II

Prerequisite: Management N-466.

This course will attempt to further develop the conceptual framework which was established in Management Theory I. To this end it will examine selected management concepts and appraise their value in terms of their application to the actual practice of business. Issues such as the effect of innovation and technological change, managing the knowledge worker, organization planning and comparative management will be considered. (Half course).

NOTE: — Students who have credit for Management 452 may not take this course for credit.

Management N-475. Business Law

The purpose of this course is to examine and correlate through a functional approach the essential nature, source and meaning of the principles and rules governing business activity, more particularly commercial contracts. A detailed examination of the Quebec Provincial and Canadian Federal laws relating to business transactions, including persons and property, ownership, contracts in general, and the special contracts of agency, lease of real estate and moveables, bills of exchange. (Half course).

NOTE: — Students who have credit for Management 211 may not take this course for credit.

Management N-476. Business Law

Prerequisite: Management N-475.

The purpose of this course is to examine the legal framework of the Canadian business organization and important areas of law relating thereto, including partnership and company law, securities regulations, loans and hypothecs, bankruptcy, insurance, carriers, anti-combines, fair employment and consumer protection legislation. (Half course).

NOTE: — Students who have credit for Management 211 may not take this course for credit.

MARKETING

Vishnu Kirpalani, *Associate Professor of Marketing, and Chairman of the Department.*
Bruce Mallen, *Professor of Marketing.*
Kailash C. Dhawan, *Associate Professor of Marketing.*
George S. Lane, *Associate Professor of Marketing.*
John H. Scheibelhut, *Associate Professor of Marketing.*
W.B.M. Cassie, *Assistant Professor of Marketing.*
Ronald H. Rotenberg, *Assistant Professor of Marketing.*
Harold Shaffer, *Assistant Professor of Marketing, ana Director of the School of Retailing.*

Marketing N-301. Marketing and Society (Introductory)

Prerequisites: Economics N-211 or N-212, Management 213 and 214.

An analytical, non-managerial course designed to foster understanding of why marketing, a distinctly human phenonemon, exists, the role of exchange in social intercourse, and the interrelationships between the environment, man and the economic, legal and social institutions he creates to facilitate the consummation of transactions. (Half course).

NOTE: — Students who have credit for Marketing 211 and/or Marketing 411 or Marketing 421 may not take this course for credit.

Marketing N-350. Marketing Management

Prerequisites: Accountancy N-214 and Marketing N-301.

An analytical course wherein the student utilizes the concepts, tools and practices used by managers in planning, establishing policies and solving marketing problems. (Half course).

NOTE: — Students who have credit for Marketing 211 and/or Marketing 411 or Marketing 421 may not take this course for credit.

Marketing N-352. Buyer Behaviour

Prerequisites: Marketing N-301, Management N-213 and N-214 and Quantitative Methods N-243 and N-244.

This course analyzes the motivations, roles and behaviours of the industrial buyer and the consumer, how he and she are affected by economic, social and cultural influences, and how the marketer may model this behaviour for decision making purposes. (Half course).

NOTE: — Students who have credit for Marketing 431 may not take this course for credit.

Marketing N-402. Marketing Intelligence

Prerequisites: Marketing N-350 and Marketing N-352.

The nature and scope of marketing research, methods of obtaining internal and external data, the design and use of marketing information systems, analysis of data, the preparation and evaluation of marketing research reports. (Half course).

NOTE: — Students who have credit for Marketing 412 or Marketing 451 may not take this course for credit.

Marketing N-403. Marketing Communications

Prerequisites: Marketing N-350 and Marketing N-352.

This course analyzes the process of communication from seller to buyer, the theories, strategies and roles of opinion formation, attitude change and persuasion, and the effects of different sources, media and messages upon both consumers and intermediate buyers. (Half course).

NOTE: – Students who have credit for Marketing 431 may not take this course for credit.

Marketing N-452. Marketing Research

Prerequisite: Marketing N-402 previously or concurrently.

The application of marketing research to problem areas such as advertising, sales management and product strategy. Alternative research designs are applied to actual problems. (Half course).

NOTE: – Students who have credit for Marketing 412 or Marketing 451 may not take this course for credit.

Marketing N-453. Advertising and Sales Promotion Management

Prerequisite: Marketing N-403 or concurrent registration.

The course deals with the theory and practice of advertising and sales promotion. Through case studies, field trips and simulations the student learns how to analyze media and budgets, plan promotional campaigns, utilise research findings and evaluate advertising effectiveness. (Half course).

NOTE: – Students who have credit for Marketing 221 and/or Marketing 222 or Marketing 431 may not take this course for credit.

Marketing N-454. Sales Management

Prerequisite: Marketing N-403 previously or concurrently.

The course deals with the theoretical and applied aspects of the management of personal selling. Through cases, simulations and special presentations the student learns how to recruit, select, train, organize, motivate, evaluate, compensate, supervise and control the sales force. (Half course).

NOTE: – Students who have credit for Marketing 414 or Marketing 461 may not take this course for credit.

Marketing N-462. Multinational Marketing Management

Prerequisites: Marketing N-350 and Marketing N-352.

In this course the student analyzes the major forms of international marketing; the impact of differing environments upon marketing policies and strategies; the segmentation of multinational markets; the development of international channel systems; the roles of marketing in developing countries, in communist countries and in integrated markets and trade blocs. (Half course).

Marketing N-463. Retail Management

Prerequisites: Marketing N-350 and Marketing N-352.

This course seeks to apply the theories of marketing and administra-

tion to the retail situation. Topics to be covered include site selection for single and multi-unit retail outlets, organizing and staffing the retail operation, the wholesaler-retailer relationship, consumer behaviour in the retail situation. The impact of such new developments as consumer cooperatives, franchising, discounting and computer technology on the future of retailing will also be considered. (Half course).

NOTE: – Students who have credit for Marketing 481 may not take this course for credit.

Marketing N-464. Consumerism

Prerequisites: 2 semester courses in Marketing.

The current evolution of marketing and consumerism is subjected to critical evaluation and analytical review. Problem areas which may be examined include marketing costs and efficiency, the social objectives of and objections to marketing, the impact of marketing on the environment, the "pollution of advertising", ethics of marketers, and the role of government in the market place. (Half course).

Marketing N-490. Marketing Policy

Prerequisites: Marketing 350 and 352.

A capstone course in Marketing, utilizing readings, projects and selected case studies requiring the student to incorporate concepts and techniques of previous marketing courses in determining marketing policy. (Half course).

QUANTITATIVE METHODS

Zoltan G. Popp, *Associate Professor of Quantitative Methods, and Chairman of the Department.*
Andrew Berczi, *Professor of Quantitative Methods.*
G. Pederzoli, *Associate Professor of Quantitative Methods.*
Valavanur K. Venkataraman, *Associate Professor of Quantitative Methods.*
Clarence Bayne, *Assistant Professor of Quantitative Methods.*
D.G. Haltrecht, *Assistant Professor of Quantitative Methods.*
William Lawson, *Assistant Professor of Quantitative Methods.*
L.A. Smith, *Assistant Professor of Quantitative Methods.*
Roland O. Wills, *Assistant Professor of Quantitative Methods.*
Dale D. Doreen, *Visiting Assistant Professor of Quantitative Methods.*
Lynn Verchere, *Sessional Lecturer in Quantitative Methods.*

Quantitative Methods N-243. Introductory Business Statistics

Prerequisite: One CEGEP course in each of Intermediate Algebra and Calculus, or equivalent.

An introductory course in Business statistics which includes: - descriptive measures; index numbers; frequency distribution analysis; probability theory; theoretical discrete and continuous distributions; point and confidence interval estimation; elementary hypothesis testing. Ap-

plications in administration and management will be emphasized. (Finance, Marketing, etc.) Lectures and lab. (Half course).

NOTE: – Students who have credit for Math 241, Statistics 242, Q.M. 242, may not take this course for credit.

Quantitative Methods N-244. Introductory Business Statistics II

Prerequisite: Q.M. N-243 or equivalent.

This course is an extension of Q.M. N-243 which includes simple linear regression and correlation analysis, elementary forecasting and smoothing techniques, time series analysis, elementary sampling theory, acceptance sampling, quality control, and introduction to variance analysis. Applications in administration and management will be emphasized (Finance, Marketing, etc). Lectures and lab. (Half course).

NOTE: – Students who have credit for Statistics 242 or Q.M. 242 may not take this course for credit.

Quantitative Methods N-313. Managerial Operations Research I

Prerequisite: Q.M. N-243 and N-244, or equivalent.

This course is an introduction to Managerial Operations Research and its role and function in executive decisions. The basic areas covered include: Optimization Concepts and Model Building; Decision Theory (matrix and decision tree approach); Game Theory; Utility Theory; Allocation Theory (Assignment and Transportation Problems); Linear Programming and applications. (Half course).

NOTE: – Students who have credit for Quantitative Methods 411 or Quantitative Analysis 411 may not take this course for credit.

Quantitative Methods N-314. Managerial Operations Research II

Prerequisite: Quantitative Methods N-313 or equivalent.

This course is an extension of Quantitative Methods N-313. The basic areas covered include: Inventory theory and control; Simulation (Deterministic and Stochastic); Sequencing and Scheduling Models; Network Theory (CPM and PERT); and Applications of Markov Chains. (Half course).

NOTE: – Students who have credit for Quantitative Analysis 411 or Quantitative Methods 411 may not take this course for credit.

Quantitative Methods N-353. Mathematical Analysis for Business - Calculus

Prerequisite: One CEGEP course in each of Intermediate Algebra and Calculus or equivalent.

The various applications of differential and integral calculus and the use of difference and differential equations in the functional areas of management, e.g. production, marketing, accounting, and finance, personnel administration, and purchasing will be studied. (Half course).

NOTE: – Students who have credit for Mathematics 415 may not take this course for credit.

Quantitative Methods N-354. Mathematical Analysis for Business - Matrix Algebra

Prerequisite: One CEGEP course in each of Intermediate Algebra and Calculus or equivalent.

Properties and applications of matrix algebra in the functional areas of management, e.g. production, marketing, accounting and finance, personnel administration and purchasing will be studied. Special applications (e.g. Input-Output Analysis) will be explored. (Half course).

NOTE: – Students who have credit for Mathematics 415 may not take this course for credit.

Quantitative Methods N-415. Managerial Operations Research - Advanced

Prerequisite: Quantitative Methods N-313 and N-314, or equivalent.

In this course more advanced Operations Research techniques are presented with special reference to their applicability to managerial decision-making. The topics include: mathematical programming (linear, non-linear, integer and dynamic); Queuing Theory (Analytical and Simulated solutions); Maintenance and Replacement problems. The course will make generous use of relevant cases and will require computer applications using the real time computer terminal facilities of the University. The emphasis is on the development of the quantitative problem solving ability of the student with special regard to practical applications in Production, Marketing, Accounting and Finance, Personnel Administration, Purchasing, etc. (Half course).

NOTE: – Students who have credit for Quantitative Methods 412 may not take this course for credit.

Quantitative Methods N-423. Computers and Data Processing

Prerequisite: Computer Science N-211 or equivalent.

This course provides an introduction to business data processing. It introduces the Common Business Oriented Language (COBOL) and concentrates on mass storage characteristics and techniques with special reference to file organization and design. Basic business applications (e.g. accounts receivable, inventory, payroll, forecasting) will be studied. (Half course).

NOTE: – Students who have credit for Quantitative Methods 421 may not take this course for credit

Quantitative Methods N-424. Data Processing Systems and Applications

Prerequisite: Computer Science N-211 or equivalent.

This course will survey and study the various currently available data processing systems and their applications (e.g. time sharing, real time, multi-programming and multi-processing, data communications, computer utilities). The selection and evaluation of both hardware and software will be discussed. This is an appreciation course oriented towards the potential user. (Half course).

NOTE: – Students who have credit for Quantitative Methods 421 may not take this course for credit.

Quantitative Methods N-425. Business Systems Analysis and Design

Prerequisite: Computer Science 211 or equivalent.

This is an introductory course in Business Systems Theory. It will study the various characteristics and nature of business systems. System components and input-processing-output relationships will be analysed; systems model development (partial and total) will be examined and the methodology and techniques of systems design and analysis will be explored. (Half course).

NOTE: – Students who have credit for Quantitative Methods 422 may not take this course for credit.

Quantitative Methods N-426. Business Systems Simulation and Control

Prerequisite: Computer Science N-211, Quantitative Methods N-244, Quantitative Methods N-314; or equivalent.

Digital simulation of stochastic and deterministic business sub-systems will be studied and executed in FORTRAN; various other simulation languages and models will be reviewed and evaluated; large scale simulation models (total system approach) and computer oriented management planning and control models will be examined. (Half course).

NOTE: – Students who have credit for Quantitative Methods 422 may not take this course for credit.

Quantitative Methods N-433. Topics in Quantitative Methods

Prerequisite: Permission of the department.

This course is intended primarily for honours or major students, and affords an opportunity for more intensive examination of one or more particular topics in Quantitative Methods. The specific subject will vary according to the special interest of the professor offering the course in any given year. (Half course).

Quantitative Methods N-445. Advanced Business Statistics - Statistical Estimation

Prerequisite: Quantitative Methods N-243, and Quantitative Methods N-244, or equivalent.

This course deals with multivariate analysis and sampling theory as applied to business and economic problems. It is expected that the students acquire a good working knowledge of these techniques through extensive use of the Quantitative Methods laboratory facilities. The course content includes: linear and non-linear multiple regression and correlation analysis; exponential smoothing, and advanced forecasting techniques; advanced sampling theory. Applications will deal with problems in the functional areas of management, e.g., production, marketing, accounting, finance, personnel administration, and purchasing. (Half course).

NOTE: – Students who have credit for Quantitative Methods 442 may not take this course for credit.

Quantitative Methods N-446. Advanced Business Statistics - Statistical Analysis

Prerequisite: Quantitative Methods 243 and Quantitative Methods 244, or equivalent.

This course is complementary to Quantitative Methods 445. It will deal with various topics in statistical analysis applied to business and economic problems. The areas of application are essentially production, marketing, accounting and finance, personnel administration, and purchasing. It includes: Analysis of Variance; Design of Experiments; non-parametric statistics and introduction to factor analysis. (Half course).

NOTE: – Students who have credit for Quantitative Methods 442 may not take this course for credit.

COMPUTER SCIENCE

Some courses in Computer Science are available as electives to Commerce students.

ADDITIONAL COURSES OF STUDY

The following courses are offered to meet the needs of various business organizations. They do not carry credit towards the Bachelor of Commerce degree.

Students must consult the time-table to determine which of the following courses are offered in the current academic year.

Business N-221 (221) (non credit). Office Management

A course in the principles of office management, including such topics as the function of the office in business; organization and principles of control; office systems and routines; office equipment and labour saving devices; office planning and layouts; selection and training of office personnel; office communications. (Full course).

NOTE: – This course was previously designated as Administration 221. Students who have taken Administration 221 should not take this course.

Business N-222 (222) (non credit). Procurement Principles

This course is designed to cover the fundamentals of purchasing policies and procedures and the organization and functions of the purchasing department in business and industry. Topics covered will include pricing, negotiation, quality and quantity determination, budgetary institutions, etc., as well as the relationship between purchasing and other management functions. Class discussion and case studies are the basic method of study employed. (Full course).

NOTE: – This course was previously designated as Administration 442 and 443. Students who have taken Administration 442 and/or 443 should not take this course.

Business N-223 (223) (non credit). Business Systems

This course is designed primarily for students with practical business experience, managers, and potential systems men. It provides a panoramic view of the systems tools, techniques and equipment and relates them to practical situations arising in an enterprise in this age of change. Topics covered include: translation of management objectives into business systems, procedures and methods; organization planning; fact finding and related tools such as flow charting, work measurement, information requirement studies; selling, implementation and management of system and organization changes including planning, presentation and documentation tools such as a critical path scheduling, decision table construction, procedure writing, project control techniques; information gathering, processing, distribution and retention equipment from simple office machines to computers. (Full course).

NOTE: – This course was previously designated as Executive Training 441 and 442. Students who have taken Executive Training 441 and/or 442 should not take this course.

Business N-260 (non credit). Basic Mathematics for Business

Review of elementary algebraic operations; fractions, ratios, proportions, percentages, simple equations, arithmetic and geometric progressions, logarithms; graphical algebra; simple and compound interest; annuities, amortization and sinking funds, depreciation and bond values; simple business statistics including: the collection of statistical data, various methods of presentation including tables and graphs, the frequency distribution and its mathematical analysis including averages, measures of dispersion, measures of skewness, normal curve, and correlation. (Full course).

SPECIAL CERTIFICATE PROGRAMMES

There are many organizations within the business community designed to serve the needs of people working in specialized areas of business. These organizations recognize that the educational qualifications of those seeking membership must be continually upgraded. Therefore, they sponsor an Academic Certificate which may be obtained through correspondence courses or through a lecture programme.

The Faculty of Commerce co-operates with these business organizations by permitting personnel to register as partial students, and to take courses leading to a Certificate to be awarded by the organization concerned.

Students must comply with the University regulations regarding dates of application and partial student entrance requirements as outlined in the University Announcement. In addition to this, they must meet the requirements of the specific organization.

The credit courses taken may be applied towards the Bachelor of Commerce degree provided the student meets the admission requirements and wishes to transfer from partial status to undergraduate status after completing a Certificate programme. Students are advised that they must meet the Bachelor of Commerce curriculum requirements in force at the date of transfer.

Each Certificate programme has one or more special courses required to complete the programme. These courses do not carry credit toward a Bachelor's degree and are designated as Non-Credit courses.

Students interested in the following Certificate programmes will obtain details of required courses from the organization concerned:

The Administrative Management Society (Montreal Chapter) Inc.
The Montreal Personnel Association.
The American Marketing Association (Montreal Chapter)
The Canadian Association of Purchasing Agents (Montreal Division).
Data Processing Management Association (Montreal Chapter).

The following organization co-operates in offering courses as continuing education:

The Systems and Procedures Association of America,
(Montreal Chapter):
Business 223 (non-credit). Business Systems.

The following organizations suggest that students take certain courses at this University as preparation for their uniform final examinations:

1. The Society of Industrial and Cost Accountants of Quebec.
2. Association of Certified General Accountants (Quebec Division).
3. Association of Chartered Institute of Secretaries (Quebec Division).

VIII
faculty of
engineering

ADMISSION TO UNDERGRADUATE STANDING IN ENGINEERING

ADMISSION REQUIREMENTS

General Admission requirements are listed on page 46.

Specific requirements are those contained in the CEGEP pre-Engineering profile or the equivalent in university collegial programmes, that is:

Sir George Williams University		CEGEP
Biology	001	301
Chemistry	001	101
	002	201
Mathematics	002	101
	003	103
	004	105
	005	203
Physics	001	101
	002	201
	003	301

Applications from graduates of CEGEP technology programmes will also be considered. Such applicants admitted to the undergraduate programme may be required to take certain special courses in the Evening Division. Consideration is currently being given to the necessity for special courses, in consultation with CEGEPs offering such programmes in the Montreal area.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING

The University offers a programme leading to the degree of Bachelor of Engineering in the fields of Civil, Electrical and Mechanical Engineering. To be recommended for the degree of Bachelor of Engineering, students must satisfactorily complete all the General Faculty Requirements and all the requirements of the Department in which they are registered. The General Faculty Requirements are given below and comprise a uniform group of courses, the French Language Requirement and the Graduation Regulations specified below, as well as the Academic Regulations in Section X; all are common to the three

Departments. The individual Departmental Requirements are given in subsequent sections. They comprise a group of required courses with a group of elective courses which allow students to select part of their programme to provide some depth in an area of specialization according to their particular interests or breadth in the general field of their chosen Department. In their final undergraduate year, students with high standing may be granted permission by their Department and the Engineering Graduate Studies Committee to register for a limited number of graduate courses offered by the Faculty in lieu of some courses in the undergraduate programme.

A special feature of the programme is the early introduction of a "physical systems approach" as a unifying theme, concurrent with a related sequence of laboratory work designed to emphasize a concern for the problems of measurement and associated instrumentation. Undergraduates may elect to follow programmes designed to provide modern education in the traditional engineering disciplines, or they may elect to concentrate on systems engineering in considerable depth.

PROGRAMMES OF STUDY

Successful completion of the degree programme in Engineering requires hard work and considerable dedication on the part of each student. Courses are presented with the expectation of an average of about two hours of "outside" work for each lecture hour and about one-half hour of "outside" work for each hour spent in the laboratory for all programmes of study.

Programmes of study are available in both the Day and Evening Divisions as described below. Students are subject to the same regulations regardless of their programme of study.

(1) Day Division

Normal arrangements in the Day Division allow students' programmes to vary such that they can expect to graduate at the end of six to eight terms of successful study after entry with the minimum admission qualifications. In view of the expected average "outside" work load stated above, students must plan their individual programmes on the basis of their academic ability and in consultation with the Chairman of their Department.

Special arrangements are available in the Day Division for students who have successfully completed the First Year of the programme, or its equivalent, and whose employers are prepared to certify that they are employed approximately on a half-time basis. Priority for study with special arrangements is given to

students who have completed the First Year of the programme in the Evening Division. All students registered in the Day Division with such arrangements must have been granted approval for them by the office of the Secretary for Engineering Undergraduate Studies, from whom the pamphlet "Industrial Parallel Studies", giving more detailed information, can be obtained.

(2) Evening Division

The programme of study in the Evening Division offers an opportunity for part-time study of engineering fundamentals. A limited number of courses is offered annually from those marked with an asterisk (*) in the lists on pages 255, 258 , 260 and 262. Any special courses offered for graduates of CEGEP technology programmes admitted to Engineering undergraduate studies will also be offered in the Evening Division. Students will normally register for three courses per term, but they should consider their employment commitments as well as their academic ability in planning their programmes.

Evening Division students registered in the Engineering undergraduate programme must subsequently transfer to the Day Division to complete the requirements for the B. Eng. degree. Applications for transfer to the Day Division will be considered at any time after a student has satisfactorily completed the First Year of the programme and those approved will become effective at the start of the next Fall term.

GENERAL FACULTY REQUIREMENTS

Course Requirements

To be recommended for the degree of Bachelor of Engineering, students must satisfactorily complete the following courses as well as those specified by their Department, as shown in subsequent sections.

E Math N-311* **Advanced Calculus & Ordinary Differential Equations**
E Math N-331* **Vector Analysis & Matrix Algebra**
E Math N-351* **Complex Variables**
E Math N-371* **Applied Probability & Statistics**
Engin N-211* **Engineering Graphics**
Engin N-221* **Materials Science**
Engin N-241* **Applied Mechanics**
Engin N-341* **Mechanics of Materials I**
Engin N-351* **Thermodynamics I**
Engin N-371* **Physical Systems & Measurements I**
Engin N-372* **Physical Systems & Measurements II**
Engin N-501 **Engineering Economy & Practice**
Engin N-510 **Technical Report (1)**
Two courses in Social Aspects of Engineering

* *Offered in both Day and Evening Divisions.*

(1) *To be submitted at the beginning of the academic year in which the student expects to graduate.*

French Language Requirement

All undergraduates registered in the Faculty of Engineering are required to pass, or be exempt from, a French language examination at some time prior to graduation. Foreign students attending the University on a student visa and students whose previous education was conducted in the French language may be exempt from this requirement by applying to the Secretary for Engineering Undergraduate Studies. Examinations will be held in the Fall and Spring terms of each year. It is recommended that students who do not have sufficient background in the French language take French N-211 during their first year of residence.

Graduation Regulations

Upon the completion of all the requirements for the B. Eng. degree, candidates will be recommended for its award provided they have a

cumulative grade point average (cgpa) of at least 1.80. This average will be calculated as the ratio of the sum of the grade points obtained in the complete programme followed by the candidate to the total number of courses taken in that programme, with the following points being awarded for each grade.

Grade: A B C D	Failing grades (F, Abs, Inc, R)
Points: 4 3 2 1	0

A failing grade in a required course must have been cleared by a passing grade in that course; that is, either an S grade, or a passing grade when repeating the course. A failing grade in an elective course should have been similarly cleared, but a passing grade in a different elective may be used to clear such a failure provided registration in it was approved by the Chairman of the Department in which the candidate is registered.

In calculating the cgpa, the S grade removes the zero for the failing grade and counts as one point for the course. However, a failing grade not cleared by the S grade is included in the calculation as well as the grade subsequently obtained when repeating the course or taking a substitute elective. Both a repeated course and a substitute elective are counted as additional courses in assessing the total number of courses taken. Failures in supplemental examinations have no effect on the cgpa.

Membership in the Corporation of Engineers of Quebec

The Corporation of Engineers of Quebec, at its council meeting of May 24, 1967, has fully accredited the curricula in Civil, Electrical and Mechanical Engineering offered by Sir George Williams University. The Corporation will admit as members graduates of these three programmes according to clause 17 of the Engineers Act and clauses 3A and 3B of the Corporation's By-Laws.

Accreditation by the Canada Council of Professional Engineers

The Accreditation Board of the Canadian Council of Professional Engineers, as of February 14, 1969, accredited the curricula in the Departments of Civil, Electrical and Mechanical Engineering. Graduation from the above curricula will be accepted as meeting the academic requirements for registration as a Professional Engineer in all Provinces of Canada.

First Year Engineering

Undergraduates are admitted to the Department of Civil, Electrical or Mechanical Engineering, but the first term is common to all Departments as follows:

E Math N-311	Advanced Calculus & Ordinary Differential Equations
Engin N-211	Engineering Graphics
Engin N-221	Materials Science
Engin N-241	Applied Mechanics
Engin N-371	Physical Systems & Measurements I

The second term is common in the Departments of Electrical and Mechanical Engineering while it is somewhat different in the Department of Civil Engineering. The minimum requirements for the second term in each Department are shown below; all courses included are general Faculty requirements, so it is possible for an undergraduate to change his Department prior to his second year of study without creating serious difficulties in his programme.

	Department
E Math N-331 Vector Analysis & Matrix Algebra	All
E Math N-351 Complex Variables	Elec. & Mech.
Engin N-341 Mechanics of Materials I	Civil
Engin N-351 Thermodynamics I	All
Engin N-372 Physical Systems & Measurements II	All

The first year for students following a sequence with the expectation of graduating in six terms is identical to that shown above, but one or more courses must be added in the second term in consultation with the Chairman of the Department.

Students admitted to the programme without previous credit for the equivalent of Computer Science N-211 must complete that course or its equivalent before entering their second year of study in the Faculty of Engineering.

DEPARTMENT OF CIVIL ENGINEERING

Civil Engineering is primarily concerned with the creation of the complex systems of constructed facilities for sound economic growth of the community. In a broad sense, the civil engineer learns to control and modify the environment effectively so as to satisfy the needs and desires of society. His responsibility for design ranges from foundations and superstructures of our common structures such as buildings, bridges, dams, tunnels, wharves, etc., to many unusual structures such as rocket installations, containment vessels for nuclear reactors, supports for radio telescopes, frameworks for aircraft. In addition the civil engineer must concern himself with the engineering aspects of water resources, rivers, harbours, irrigation and drainage; with the disposal of wastes and the control of the quality of air and water; with highways, railroads, airports and other transportation facilities; with measuring, mapping and interpreting the physical conditions of the surface of the earth; and with planning metroplitan areas and constructing and managing their public facilities.

Technical electives in the Department of Civil Engineering are offered in three broad interrelated areas. Suiting his particular professional objectives and aptitudes, the student can choose electives to provide some specialization in the following areas:

1. Structural Engineering
2. Water Resources Engineering
3. Transporation Engineering

In each case, a coherent program of scientific, technical and management subjects must be choosen.

The requirements for the award of the B. Eng. degree in the Department of Civil Engineering are shown below.

General Faculty Requirements (see page 255)

Departmental Requirements:

E Math N-411	**Transform Calculus & Partial Differential Equation**
Engin N-212	**Introduction to Engineering Design**
Engin N-361*	**Fluid Mechanics I**
Engin N-441	**Mechanics of Materials II**
Engin N-461	**Fluid Mechanics II**
Civ. Eng. N-421	**Engineering Materials**
Civ. Eng. N-431	**Geology**
Civ. Eng. N-451	**Structural Engineering I**

Civ. Eng. N-452 Structural Engineering II
Civ. Eng. N-461 Hydrology
Civ. Eng. N-462 Water Resources Engineering I
Civ. Eng. N-471 Surveying (1)
Civ. Eng. N-472 Transportation Engineering I
Civ. Eng. N-531 Soil Mechanics I
Civ. Eng. N-532 Foundations
Civ. Eng. N-551 Structural Engineering III
Civ. Eng. N-581 Public Health Engineering I
Civ. Eng. N-582 Public Health Engineering II
                     Technical electives.*

(1) Summer school to be taken before entering second year of study in the Faculty of Engineering.

* Offered in both Day and Evening Divisions.

** Technical electives will be chosen from the following courses or other undergraduate courses approved by the Chairman of the Department or his representative. Six units must be obtained in either Option S, T or W with at least six from the other Options.

		Elective Units	Option
Engin N-512	**Operations Research**	3	X
Engin N-541	**Experimental Stress Analysis**	3	X
Civ. Eng. N-533	**Soil Mechanics II**	3	X
Civ. Eng. N-552	**Matrix Analysis of Structures**	3	X
Civ. Eng. N-553	**Structural Engineering IV**	3	S
Civ. Eng. N-554	**Structural Engineering Project**	3	S
Civ. Eng. N-561	**Water Resources Engineering II**	3	W
Civ. Eng. N-562	**Water Resources Engineering III**	3	W
Civ. Eng. N-571	**Transportation Engineering II**	3	T
Civ. Eng. N-572	**Transportation Engineering III**	3	T
Civ. Eng. N-573	**Urban Planning**	3	X

DEPARTMENT OF ELECTRICAL ENGINEERING

Electrical Engineering is concerned primarily with energy and information; their conversion, transformation and transmission in the most efficient, convenient and reliable manner. Electric motors and illumination are two aspects of electrical engineering which are easily recognized. The electrical engineer is involved not only in their design, manufacture and application, but also in the original conversion from mechanical, thermal, solar, wind or nuclear energy to electrical form and its transmission to the place where it is required. Another important aspect of electrical engineering is in the field of information processing and transmission, for example telegraph, telephone, radio, television, radar, and computers.

The activities of electrical engineers therefore may range from the generation and distribution of massive amounts of power,

through information systems, computer science to various inter-disciplinary fields such as bio-medical engineering. Electrical engineers, through their various functions, therefore exert a profound influence on the cultural, social and economic life of a modern society.

The Electrical Engineering programme emphasizes the breadth of the field through a series of courses giving a unified treatment of several kinds of physical systems. Towards the end of the pro-gramme, a student may choose from a broad range of courses, groups which will allow him to obtain either a broad education in electrical engineering or to specialize to some extent in one or two specfic areas.

The requirements for the award of the B. Eng. degree in the Department of Electrical Engineering are shown below.

General Faculty Requirements (see page 255)
Departmental Requirements:

E Math N-412	**Transform Calculus**	
E Math N-413	**Partial Differential Equations**	
Engin N-471	**Physical Systems & Measurements III**	
Engin N-472	**Control Systems I**	
Elec. Eng. N-411	**Electronics I**	
Elec. Eng. N-412	**Electronics II**	
Elec. Eng. N-421	**Electrical Properties of Solids**	
Elec. Eng. N-431	**Electromechanics I**	
Elec. Eng. N-441	**Network Theory I**	
Elec. Eng. N-451	**Electromagnetic Field Theory**	
Elec. Eng. N-501	**Electrical Engineering Seminar**	
Elec. Eng. N-521	**Semiconductor Physics**	
Elec. Eng. N-561	**Communication Theory**	
Elec. Eng. N-581	**Electrical Engineering Project I**	
Elec. Eng. N-582	**Electrical Engineering Project II**	
	Technical electives.*	

* Technical electives to a total of at least 22.5 elective units will be chosen from the following courses. All elective patterns must be ap-proved by the Chairman of the Department or his representative.

		Elective Units
E Math N-471	**Introduction to Stochastic Processes**	3
E Math N-491	**Numerical Methods in Engineering Systems**	3
Engin N-361**	**Fluid Mechanics I**	3
Engin N-511	**Computer Organization & Software**	4
Engin N-512	**Operations Research**	3
Engin N-571	**Control Systems I**	4

** Offered in both Day and Evening Divisions.

Engin N-572	**Control Systems III**	4
Engin N-573	**Control Systems IV**	4
Engin N-574	**Digital Computers in Systems**	4
Elec. Eng. N-432	**Electromechanics II**	4
Elec. Eng. N-511	**Electronics III**	4
Elec. Eng. N-521	**Semiconductor Devices Design**	3.5
Elec. Eng. N-541	**Network Theory II**	3
Elec. Eng. N-542	**Network Theory III**	3
Elec. Eng. N-543	**Network Theory IV**	3
Elec. Eng. N-551	**Electromagnetic Wave Propagation**	3.5
Elec. Eng. N-552	**Microwave Engineering**	3.5
Elec. Eng. N-562	**Statistical Communication Theory**	3
Elec. Eng. N-571	**Electrical Power System Engineering**	4
	Any two Computer Science courses offered (1)	

(1) Other than Computer Science N-211; 3.5 elective units will be assigned to each Com-puter Science course taken as an elective in the Department, up to a maximum of seven.

DEPARTMENT OF MECHANICAL ENGINEERING

As in all branches of professional engineering, the mechanical engineer is concerned with the creation of devices, systems, structures and processes for human use. His task is to apply scientific, mathematical, economic and social knowledge to satisfy specific needs. The services required of mechanical engineers encompass a very wide range of professional activity, such as design, research, development and management carried out in environments of equally diverse nature, such as industry, medi-cine, private practice, university and government.

Representative fields of endeavour for mechanical engineers include all forms of power-generating equipment (steam, internal combustion, nuclear, jet, rocket, fuel cells), the design of mech-anisms and machines, controls and automation, vibration analysis, environmental control (heating, ventilation and refrigeration), materials handling and precision measurement. Any of the spe-cific fields may involve the design, construction and control of machines and equipment as well as the research and development of new processes, materials and techniques.

In view of the very wide range of activities in the field, the mech-anical engineering curriculum consists of a combination of core courses with a series of technical electives. Strong emphasis is given to building on the principles presented in the basic engineer-ing science and physical systems courses of the General Faculty Requirements. Further core courses are taken by all mechanical engineering undergraduates and deal with topics basic to the field,

including control theory, thermodynamics, fluid mechanics, heat transfer, machine design and metallurgy. Technical electives allow a student to obtain some specialization in particular area of the field, depending on his interests and expected future professional activity. Three general areas of specialization are available, namely conventional mechanical engineering which emphasizes thermalfluid power (Option A), design and production engineering (Option B) and electro-mechanical systems including control systems (Option C).

The requirements for the award of the B. Eng. degree in the Department of Mechanical Engineering are shown below.

General Faculty Requirements (see page 255)
Departmental Requirements:

E Math N-411	Transform Calculus & Partial Differential Equations
Engin N-212	Introduction to Engineering Design
Engin N-361*	Fluid Mechanics I
Engin N-441	Mechanics of Materials II
Engin N-461	Fluid Mechanics II
Engin N-471	Physical Systems & Measurements III
Engin N-472	Control Systems I
Elec. Eng. N-431	Electromechanics I
Mech Eng. N-421	Heat Treatment of Metals
Mech Eng. N-422	Mechanical Properties of Metals
Mech Eng. N-441	Kinematics of Mechanisms
Mech Eng. N-442	Dynamics of Machines
Mech Eng. N-451	Thermodynamics II
Mech Eng. N-452	Heat Transfer I
Mech Eng. N-541	Machine Design I
	Technical electives.**

* Offered in both Day and Evening Divisions.
** Technical electives to a total of at least 17 elective units will be chosen from the following courses from within the same Option, A, B or C. All elective patterns must be approved by the Chairman of the Department or his representative.

		Elective Units	Options
Engin N-511	Computer Organization & Software	4	B, C
Engin N-512	Operations Research	3	B
Engin N-541	Experimental Stress Analysis	3	B
Engin N-571	Control Systems II	4	B, C
Engin N-572	Control Systems III	4	C
Engin N-573	Control Systems IV	4	C
Engin N-574	Digital Computers in Systems	4	B, C
Elec. Eng. N-411	Electronics I	4	A, B, C
Elec. Eng. N-412	Electronics II	4	C

Elec. Eng. N-432	Electromechanics II	4	A, C
Mech Eng. N-521	Manufacturing Processes	3	B
Mech Eng. N-542	Machine Design II	4.5	B
Mech Eng. N-543	Mechanical Vibrations	4	A, B, C
Mech Eng. N-551	Thermodynamics III	4	A, C
Mech Eng. N-552	Heat Transfer II	4	A, C
Mech Eng. N-553	Environmental Control	3	A
Mech Eng. N-554	Statistical Thermodynamics	3	A
Mech Eng. N-561	Gas Dynamics	4	A
Mech Eng. N-562	Fluid Machinery	3	A
Mech Eng. N-581	Design or Experimental Project	3	A, B, C

FACULTY

J. Clair Callaghan, *Dean.*

Jack Bordan, *Professor of Engineering.*
M.P. du Plessis, *Professor of Engineering.*
F.A. Gerard, *Professor of Engineering, Secretary for Engineering Graduate Studies.*
Norman Jennings, *Professor of Engineering.*
V. Ramachandran, *Professor of Engineering.*
M.N.S. Swamy, *Professor of Engineering, Chairman of the Department of Electrical Engineering.*
Keith Foster, *Visiting Professor of Engineering.*
Z.A. Zielinski, *Visiting Professor of Engineering.*
A. Antoniou, *Associate Professor of Engineering.*
B.B. Bhattacharyya, *Associate Professor of Engineering.*
Matthew McC. Douglass, *Associate Professor of Engineering, Chairman of the Department of Civil Engineering.*
Paul P. Fazio, *Associate Professor of Engineering.*
J. Charles Giguère, *Associate Professor of Engineering.*
F. Douglas Hamblin, *Associate Professor of Engineering, Secretary for Engineering Undergraduate Studies.*
Wojciech M. Jaworski, *Associate Professor of Engineering.*
Clyde C.K. Kwok, *Associate Professor of Engineering.*
James F. Lindsay, *Associate Professor of Engineering.*
Bela A. Lombos, *Associate Professor of Engineering.*
Cedric Marsh, *Associate Professor of Engineering.*
Hugh J. McQueen, *Associate Professor of Engineering, Acting Chairman of the Department of Mechanical Engineering.*
M.O.M. Osman, *Associate Professor of Engineering.*
Vaclav Panuska, *Associate Professor of Engineering.*
A.S. Ramamurthy, *Associate Professor of Engineering.*
Thiagas S. Sankar, *Associate Professor of Engineering.*
M.S. Troitsky, *Associate Professor of Engineering.*
Janusz S. Kowalik, *Visiting Associate Professor of Engineering.*
Serge A. Gracovetsky, *Assistant Professor of Engineering.*
Graham Martin, *Assistant Professor of Engineering.*
Oscar A. Pekau, *Assistant Professor of Engineering.*
Otto Schwelb, *Assistant Professor of Engineering.*
M. Vidyasagar, *Assistant Professor of Engineering.*
George D. Xistris, *Assistant Professor of Engineering, Assistant to the Dean of Engineering.*

Sui Lin, *Visiting Assistant Professor of Engineering.*
Pramod K. Verma, *Visiting Assistant Professor of Engineering.*
B.E. Lazar, *Adjunct Assistant Professor of Engineering.*
J.C. Webber, *Adjunct Assistant Professor of Engineering.*
W. Hayes, *NRC Adjunct Professor in the Department of Mechanical Engineering.*
Wilfried G. Probst, *Lecturer in Engineering.*
R.L. Wang, *Sessional Lecturer.*
S. Pelusamy, *Senior Research Associate.*
N. Suresh, *Research Associate.*
R. Kahawita, *Research Associate.*
N. Suresh, *Research Associate.*
R.S. Wadhawa, *Research Associate.*
J.C. Weber, *Research Associate.*

ENGINEERING MATHEMATICS

Engineering Mathematics N-311. Advanced Calculus and Ordinary Differential Equations

Differentiation and integration of functions of several variables.
Ordinary differential equations. Applications to the solution of physical systems. Numerical methods.

Lectures: 3 hours per week
Tutorial: 1 hour per week

Engineering Mathematics N-331. Vector Analysis and Matrix Algebra

Vector calculus. Matrices. Linear vector spaces. Linear transformation. Diagonalization of matrices. Cayley-Hamilton theorem. Sylvester's theorem. Quadratic forms. Numerical methods. Applications.

Lectures: 3 hours per week
Tutorial: 1 hour per week
Prerequisite: Engineering Mathematics N-311 previously or concurrently.

Engineering Mathematics N-351. Complex Variables

Functions of complex variables. Analytic functions. Cauchy's integral theorem. Series expansions. Residue theorem. Applications to integration. Conformal mapping.

Lectures: 3 hours per week
Prerequisite: Engineering Mathematics N-311

Engineering Mathematics N-371. Applied Probability and Statistics

Elementary probability theory. Binomial, normal and Poisson distribution. Sampling and decision theory. Curve fitting. Correlation theory. Applications to the analysis of experimental results. Factorial plans.

Lectures: 3 hours per week
Prerequisite: Engineering Mathematics N-311

Engineering Mathematics N-411. Transform Calculus and Partial Differential Equations

The Laplace transform: Laplace transforms and their properties, solution of linear differential equations with constant coefficients. Further theorems and their applications. The Fourier transform: orthogonal functions, expansion of a function in orthogonal functions, the Fourier series, the Fourier integral, the Fourier transform, the convolution theorem. Partial differential equations: Physical foundations of partial differential equations. Introduction to boundary value problems.

Lectures: 3 hours per week
Prerequisite: Engineering Mathematics N-311

Engineering Mathematics N-412. Transform Calculus

Orthogonal functions, expansion of a given function in terms of orthogonal functions. The Fourier Series. The Fourier integral and the Fourier transform pair. Singularity functions. Fourier transforms of periodic functions. The sampling theorem. The fast Fourier transform. The Laplace transform. The Z transform.

Lectures: 3 hours per week
Prerequisite: Engineering Mathematics N-311

Engineering Mathematics N-413. Partial Differential Equations

Physical foundations of several types of linear partial differential equations. The Laplacian in various coordinate systems. The decomposition of a partial differential equation into a set of ordinary differential equations. The Sturm Lionville problem. Special functions. Boundary value problems with emphasis on transmission line problems.

Lectures: 3 hours per week
Prerequisite: Engineering Mathematics N-311

Engineering Mathematics N-471. Introduction to Stochastic Processes

The concept of a random variable. Distribution and density functions. Functions of one random variable. Two random variables. Functions of two random variables. Properties of the multivariable normal distribution. General concepts of stochastic processes. Correlation and power spectrum of stationary processes.

Lectures: 3 hours per week
Prerequisite: Engineering Mathematics N-371

Engineering Mathematics N-491. Numerical Methods in Engineering Systems

Methods of numerical solution of mathematical models in engineering. Interpolation. Quadratures for numerical differentiation and integration of tabulated functions. Zeros of polynomials. Systems of linear and non-linear algebraic equations. Numerical solutions of ordinary differential equations using single and multi-step methods. Analysis of round-off and discretization errors. Numerical techniques for the inversion of matrices, and for determining eigenvalues and eigenvectors of matrices, state vectors, transfer vectors and matrices.

Lectures: 3 hours per week
Prerequisites: Engineering Mathematics N-311 and N-331

ENGINEERING

Engineering N-211. Engineering Graphics

Elements of orthogonal projection, principal and supplementary views, analysis of three dimensional spatial relationships of points, lines, planes and solids. Introduction to sectioning conventions, industrial fasteners, and preparation of detail and assembly drawings.

Lectures: 3 hours per week
Laboratory: 2 hours per week

Engineering N-212. Introduction to Engineering Design

Introduction to engineering design procedures through the use of open-ended design projects. Lecture topics will include engineering design process, consideration of alternatives, specifications, selection of materials, fundamentals of manufacturing processes, dimensioning for manufacture and interchangeability, surface finish; presentation of engineering data and calculations; application of computer graphics in design.

Lectures: 2 hours per week
Laboratory: 2 hours per week
Prerequisites: Engineering N-211, Computer Science N-211 or equivalent

Engineering N-221. Materials Science

A study of the relationships between properties and internal structure and of the mechanisms of structural change. Atomic bonding; molecular,crystalline and amorphous structures. Structural imperfections and atom movements. Microstructure, plastic deformation and mechanical properties of ceramics. Structure and mechanical properties of polymers.

Lectures: 3 hours per week
Tutorial: 1 hour per week

Engineering N-241. Applied Mechanics

Force systems and equilibrium of particles and rigid bodies. Distributed forces, friction, statically determinate systems. Work and energy. Principles of particle kinematics and dynamics. Rigid body motion. Impulse and momentum. Dynamics of a system of particles and rigid body. Energy methods.

Lectures: 4 hours per week
Tutorial: 1 hour per week
Prerequisite: Engineering Math N-311 previously or concurrently

Engineering N-341 (343). Mechanics of Materials I

Stress, strain and elasticity; analysis and design of structural and machine elements subjected to axial, torsional, and bending loads; shear and bending moment diagrams; deflections; analysis of statically inderterminate systems;

combined stresses; composite beams.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Tutorial: 1 hour per week
Prerequisites: Engineering N-241, Engineering Mathematics N-311, Engineering Mathematics N-331 previously or concurrently.

Engineering N-351 (350). Thermodynamics I

Basic principles of thermodynamics and their application to various systems composed of pure substances and their homogeneous non-reactive mixtures. Simple power production and utilization cycles.

Lectures: 3 hours per week
Tutorial: 1 hour per week

Engineering N-361 (351). Fluid Mechanics I

Fluid properties and flow characteristics; fluid statics, basic laws for systems and control volumes, conservation of mass, linear-momentum equations, moment-of-momentum equations, first law of thermodynamics, Bernoulli equation, kinematics of flow, dynamics of flow, dimensional analysis and similitude, characteristics of real fluid flow, flow measurement.

Lectures: 3 hours per week
Tutorial: 1 hour per week
Prerequisites: Engineering Mathematics N-311 & N-331, Engineering N-351

Engineering N-371. Physical Systems & Measurements I

Definition of dynamical system; lumped system elements, mechanical, electrical, fluid, and thermal; generalized lumped elements; modelling of simple systems; solutions of the equations for first and second order systems; analog computation in the study of system dynamics.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Tutorial: 1 hour per week
Prerequisite: Engineering Mathematics N-311, previously or concurrently

Engineering N-372. Physical Systems & Measurements II

Network representation of systems; formulation of system equations; frequency response methods; generalized impedances; signal analysis, singularity functions, periodic functions.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Tutorial: 1 hour per week
Prerequisites: Engineering Mathematics N-311, previously or concurrently; Engineering N-371.

Engineering N-441 (441). Mechanics of Materials II

Dynamic loading, repeated loads, stress concentrations and fatigue, introduction to inelastic action, energy methods, theories of failure, shear centre, unsymmetrical bending, bending of curved bars, introduction to linearized

mathematical theory of elasticity, introduction to elastic stability.

Lectures: 3 hours per week
Prerequisites: Engineering Mathematics N-311, Engineering N-341

Engineering N-461 (451). Fluid Mechanics II

Navier-Stokes equations, incompressible, viscous flow, boundary layer theory, one-dimensional compressible flow, isentropic flow, normal shock, operation of nozzles and diffusers, flow through constant area ducts with friction, differential equations for open channel flow, specific energy, gravity waves, hydraulic jump. Selected experiments in incompressible, compressible, subsonic and supersonic flow.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering Mathematics N-411, previously or concurrently;
　　　　　　　Engineering N-361.

Engineering N-471 (471). Physical Systems & Measurements III

Advanced methods of systems analysis; introduction to distributed systems; introduction to non-linear systems and their simulation; case studies of electrical, mechanical and combined systems.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering Mathematics N-311 & N-331, Engineering N-372

Engineering N-472 (473). Control Systems I - Linear Control Systems

General feedback theory; time and frequency domain analysis of feedback control systems; stability criteria; design of simple feedback control systems; introduction to state-space methods.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering Mathematics N-351 & N-411, previously or concurrently, or N-351, N-412 & N-413 previously or concurrently: Engineering N-471.

Engineering N-501. Engineering Economy & Practice

Different branches of law: Engineering registration. Negligence. Law vs. Ethics. Contracts. Labour organizations and legislation and Workmen's Compensation Act. Organization and financing of business enterprise. Functions of management. CPM and PERT. Economy studies for decision making. Annual cost method. Present worth method. Rate of return method. Multiple alternatives. Depreciation. Income tax.

Lectures: 3 hours per week

Engineering N-510 (510). Technical Report

Each Engineering student must submit a technical report on entering his final year. This report should be from 2,000 to 5,000 words in length, on a topic drawn from the engineering experience of the student during his summer work. If a suitable topic based on personal experience is not available, the student may write on a topic connected with engineering, scientific or industrial work. Any student may consult the Chairman of his Department concerning the suitability of his proposed topic. If it is judged suitable, the letter of approval must accompany the report

The report, including an abstract, must be suitably documented and illustrated, must be typewritten on one side only of 8 ½ " x 11" white paper of good quality and must be suitably bound. Students are referred to Kate L Turabian, *A Manual for Writers of Term Papers, Theses and Dissertations*, for matters of style and notation.

The report is to be submitted by the third Monday after Fall classes begin. With the exception of special circumstances approved by the Engineering Undergraduate Studies Committee in individual cases, any acceptable report submitted after this date will receive an S grade.

Engineering N-511 (511). Computer Organization & Software

Logical basis of computer structure; machine organization and functional units; machine programming including subroutines, linkages, macros and assembly systems; compilers and operating systems.

Lectures: 3 hours per week
Laboratory: 1 ½ hours per week
Prerequisite: Computer Science N-211 or equivalent

Engineering N-512 (512). Operations Research

An introduction to the application of mathematical models to various industrial problems: queuing theory, game theory, linear programming, inventory theory and Monte Carlo processes.

Lectures: 3 hours per week
Laboratory: 1 ½ hours per week
Prerequisite: Computer Science N-211 or equivalent.

Engineering N-541 (Civil Engineering 541). Experimental Stress Analysis

A study of modern experimental methods of determining stresses and strains; mechanical, electrical and optical strain gauges; photoelasticity; brittle coatings; model analysis.

Lectures: 2 hours per week
Laboratory: 3 hours per week
Prerequisite: Engineering N-441

Engineering N-571. Control Systems II - State Space Methods

State-space analysis of continuous and discrete systems; the state transition matrix; concepts of controllability and observability; Liapunov stability theorems; introduction to optimal control theory.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering N-472, Engineering Mathematics N-351 & N-411 or N-351, N-412 & N-413.

Engineering N-572. Control Systems III - Stochastic and Non-Linear Systems

Analysis of control systems having stochastic inputs; non-linear control system analysis.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering N-472, Engineering Mathematics N-351 & N-411
        or N-351, N-412 & N-413.

Engineering N-573. Control Systems IV - Control System Design

A course in industrial process control design procedures by case study, including practical sensing, control, and activating elements and their characteristics, and an introduction to direct digital control.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Engineering N-572

Engineering N-574 (575). Digital Computers in Systems

A study of the application of digital computers to control systems. Topics to be studied include sampled data systems; coding and data transmission; interfaces and analog-digital conversion techniques; simulation of discrete systems.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering N-511 & N-571

SOCIAL ASPECTS OF ENGINEERING

Engineering N-581. Engineers and Society I

Engineering undertakings have many indirect economic and environmental effects on society. This course traces the parallel developments in ideas and attitudes towards engineering and society.

Lectures: 3 hours per week
Prerequisite: Completion of 20 courses

Engineering N-582. Engineers and Society II

A continuation of Engineering N-581, discussing methods of forecasting technological change and assessing its impact on society.

Lectures: 3 hours per week
Prerequisite: Engineering N-581

Engineering N-583. The Impact of Science and Technology in Society I

Exposition of the profound influences that (1) science has had on the intellectual life of mankind and (2) technological innovations have had on the organization of society. Part 1 considers the historical aspects, including the industrial revolution, by thoroughly examining certain highlights. Gallileo, Descartes and Newton and the subsequent steady advance in technology. Darwin, evolution and evolutionism. Advances in electricity and magnetism and industrial electrification.

Seminars: 3 hours per week
Prerequisite: Completion of 20 courses

Engineering N-584. The Impact of Science and Technology in Society II

This course considers the scientific and technological advances of

the 20th century, examines the influences and problems of the present and proceeds to formulate criteria for directing technological innovation. Remote sensing, feed-back control and automation. Mass production and quality control. Power and natural resources. Pollution, ecology and population density. Communications technology and the understanding of media. The two cultures and the new Luddites. Utopias.

Seminars: 3 hours per week
Prerequisite: Engineering N-583.

CIVIL ENGINEERING

Civil Engineering N-421. Engineering Materials

Engineering properties of steel and other selected structural metals; heat treatment of steel and aluminum alloys. Properties of woods. Engineering properties and design of concrete. Bituminous materials. Ceramics. Design characteristics and significance of test results of materials used in engineering construction. Introduction to composite materials.

Lectures: 3 hours per week
Laboratory: 3 hours per week
Prerequisite: Engineering N-221

Civil Engineering N-431 (431). Geology

Basic principles of physical and structural geology, with emphasis on topics related to Civil Engineering; study of minerals, rocks and soil types, load formation, techniques of air photo interpretations and geological maps.

Lectures: 2 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Engineering N-221

Civil Engineering N-451. Structural Engineering I

Basic structural concepts; principles of structural mechanics; design concepts; simple metal and timber structures under dead and live loads (beams, compression members, beam-columns, and trusses); introduction to structural stability, digital computer applications to analysis and design.

Lectures: 3 hours per week
Laboratory: 2 hours per week
Prerequisites: Engineering N-241; Engineering N-441, previously or
        concurrently

Civil Engineering N-452. Structural Engineering II

Approximate methods of building frame analysis. Properties and behaviour of reinforced concrete (beams, columns, and beam-columns); design of simple reinforced concrete structures; introduction to prestressed concrete. Computer applications.

Lectures: 3 hours per week

Laboratory: 2 hours per week
Prerequisite: Civil Engineering N-451

Civil Engineering N-461 (461). Hydrology

Principles of hydrology and methods of analysis for engineering planning and design; hydrologic cycles, data collection and interpretation; relation to air mass movements, precipitation, evaporation, stream flow, floods, groundwater and drainage.

Lectures: 3 hours per week
Prerequisites: Engineering Mathematics N-371, Engineering N-361

Civil Engineering N-462. Water Resources Engineering I

Open-channel flow and its classifications. Open channels and their properties. Energy and momentum principles. Critical flow: computation and applications. Development of uniform flow and its formulas. Computation of uniform flow. Design of channels for uniform flow. Gradually varied flow: theory and analysis, methods of computation and practical problems.

Lectures: 3 hours per week
Prerequisites: Engineering N-361; Engineering N-461 previously or concurrently

Civil Engineering N-471 (471). Surveying

Elementary operations employed in engineering surveying; use, care and adjustment of instruments; linear and angular measurements; traversing; earthwork calculations; theory of errors; horizontal and vertical curves and curve layout; slope stakes and grades; application of surveying methods to city, land and topographic surveying and introduction to advanced surveying techniques; use of digital computers in survey calculations.

Summer school taken before entering second year of study in the Faculty of Engineering.

Lectures and Field Work: 8 hours per day; 6 days per week for 3 weeks

Civil Engineering N-472 (472). Transportation Engineering I

A survey of all transportation modes and introduction to some recent concepts of transportation system planning. Social and economic importance of transportation; development and history of transportation; essential elements of a transportation system; characteristics of rail, road, air, water pipeline and other transportation modes. Transportation planning, land use and traffic, multiple use of right-of-way; team approach; route and terminal location.

Lectures: 3 hours per week
Prerequisite: Civil Engineering N-471

Civil Engineering N-531 (531). Soil Mechanics I

Index properties and classification of soils. Weight-volume relationships. Soil structure. Clay mineralogy. Moisture-density relationships.

Capillarity. Permeability. Flow nets and seepage. Neutral and effective stresses. Consolidation theory. Shear strength. Frost action. Stresses in soil due to external loads.

Laboratory tests to illustrate lecture topics.

Lectures: 2 hours per week
Laboratory: 3 hours per week
Prerequisite: Civil Engineering N-421

Civil Engineering N-532 (532). Foundations

Soils, rocks and soil moisture. Soil exploration. Loads, bearing capacity and settlement. Lateral pressures. Foundation drainage and waterproofing. Spread footings. Strip footings. Combined footings. Pile foundations. Caissons. Retaining walls. Sheet piling walls. Braced cofferdams. Cellular cofferdams. Anchors.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Civil Engineering N-452 & N-531

Civil Engineering N-533 (533). Soil Mechanics II

Selected topics in mechanics of soil media including water flow, rheological behaviour, failure theories, and ideal materials.

Lectures: 3 hours per week
Prerequisite: Civil Engineering N-531

Civil Engineering N-551. Structural Engineering III

Elastic deformations of structures; classical and modern methods of analysis of statically indeterminate structures; introduction to limit analysis and design of metal frames and ultimate design of statically indeterminate reinforced concrete structures. Computer applications.

Lectures: 3 hours per week
Laboratory: 2 hours per week
Prerequisites: E Math N-331, Civil Engineering N-452

Civil Engineering N-552 (553). Matrix Analysis of Structures

Classical and matrix methods of structural analysis; influence coefficients, transformation matrices. Matrix formulation of the force and of the displacement methods of analysis. Computer applications.

Lectures: 3 hours per week
Prerequisites: E Math N-411, Civil Engineering N-551

Civil Engineering N-553. Structural Engineering IV

.Extension of previous discussions; reinforced concrete slabs; prestressed concrete structures; analysis and design of building frames; simple shell structures.

Lectures: 2 hours per week
Laboratory: 3 hours per week
Prerequisite: Civil Engineering N-551

Civil Engineering N-554. Structural Engineering Project

Various design considerations and current specifications. Behaviour and design of connections; synthesizing problems for timber, reinforced concrete and steel bridges.

Lectures: 2 hours per week
Laboratory: 3 hours per week
Prerequisite: Civil Engineering N-553

Civil Engineering N-561. Water Resources Engineering II

Project planning. Selection of type of dam. Foundations and construction materials. Earthfill, rockfill and concrete dams. Spillways and outlet works. Diversion during construction. Maintenance and operation. Sample specifications.

Lectures: 2 hours per week
Laboratory: 3 hours per week
Prerequisites: Civil Engineering N-462, Civil Engineering N-531 previously or concurrently

Civil Engineering N-562. Water Resources Engineering III

Descriptive and quantitative hydrology. Groundwater. Reservoirs. Control structures. Measurement techniques. Open channels. Hydraulic machinery. Economic and graphical analysis. River engineering and navigation. Flood control. Planning and design of water resources systems.

Lectures: 2 hours per week
Laboratory: 3 hours per week
Prerequisites: Civil Engineering N-461 & N-561

Civil Engineering N-571. Transportation Engineering II

Design controls and criteria including traffic and highway characteristics and capacity. Location and right-of-way. Earthworks. Geometric design of highways and terminals. Pavement design. Highway design project.

Lectures: 2 hours per week
Laboratory: 3 hours per week
Prerequisite: Civil Engineering N-472

Civil Engineering N-572. Transportation Engineering III

Highway drainage. Highway economic analysis. Intersections and interchanges. Introduction to railroad engineering. Introduction to airport engineering. Highway design project.

Lectures: 2 hours per week
Laboratory: 3 hours per week
Prerequisite: Civil Engineering N-571

Civil Engineering N-573. Urban Planning

The general planning process. Basic studies: population, economics

and land use. Land use planning. Capital improvement programs and financing. Plan implementation.

Lectures: 3 hours per week
Prerequisite: Civil Engineering N-472

Civil Engineering N-581 (582). Public Health Engineering

Studies on theory and design of domestic industrial water supply systems; collection; development of water sources; analysis and design of distribution systems; treatment of raw water; design of treatment plants and facilities; pumps and pumping stations; chemicals and their use in water purification.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering Mathematics N-371; Civil Engineering N-462

Civil Engineering N-582 (583). Public Health Engineering II

Design of sewage collection facilities; municipal and industrial waste disposal; design of sewage treatment plants and disposal works; application of chemistry and bacteriology to design and operation units.

Lectures: 3 hours per week
Prerequisites: Engineering N-361, Civil Engineering N-462

ELECTRICAL ENGINEERING

Electrical Engineering N-411 (421). Electronics I

Characteristics of diodes, vacuum tubes, transistors, and associated devices; application to the basic processes of rectification, amplification, oscillation, and modulation.

Lectures: 3 hours per week
Laboratory: 3 hours per week
Prerequisites: Engineering Mathematics N-311, Engineering N-471

Electrical Engineering N-412 (422). Electronics II

A further, more detailed discussion of the topics listed in Electrical Engineering N-411; practical circuits for amplifiers (Class A, B and C); oscillators, modulators, etc.

Lectures: 3 hours per week
Laboratory: 3 hours per week
Prerequisite: Electrical Engineering N-411

Electrical Engineering N-421. Electrical Properties of Solids

Crystal structure, reciprocal lattice, dynamics of crystal lattices, outline of quantum and statistical mechanics, electronic conduction, semiconductors, superconductivity, dielectrics, magnetism.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Engineering N-221

Electrical Engineering N-431 (431). Electromechanics I

Energy in singly and doubly excited systems; electro-mechanical energy conversion principles; basic features of rotating machines; ideal d.c., polyphase induction, and synchronous machines.

Lectures: 3 hours per week
Laboratory: 3 hours per week
Prerequisites: Engineering Mathematics N-311; Engineering N-471, previously or concurrently.

Electrical Engineering N-432 (432). Electromechanics II

More detailed study of d.c., polyphase induction and synchronous machines, including the effects of magnetic saturation; single-phase fractional-horsepower motors; transformers in 3-phase circuits; static rectifiers and inverters; application of thermal networks to the rating of machines.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Electrical Engineering N-431

Electrical Engineering N-441 (441). Network Theory I

Networks containing active elements. Topological formulas for network analysis. Indefinite admittance matrix. Two-port networks. Characteristic functions of a two-port. Scattering parameters. Filter design.

Lectures: 3 hours per week
Prerequisites: Engineering Mathematics N-311, Engineering N-471

Electrical Engineering N-451 (451). Electromagnetic Field Theory

The field concept. Maxwell's equations. Boundary conditions. Power and energy. The electrostatic field. Electrostatic potential. The concept of capacitance (methods of solutions for the Laplace equation). Polarization. The concept of local field in matter. The magnetostatic field. The Biot-Savart law. The inductance concept. The scalar magnetic potential. The resistance concept. General energy relations.

Lectures: 3 hours per week
Tutorial: 3 hours per week, alternate weeks
Prerequisite: Engineering Mathematics N-311

Electrical Engineering N-501 (501). Electrical Engineering Seminar

In the second term of the final year, students in Electrical Engineering hold meetings with faculty members. These meetings are organized to provide the student with an opportunity to exercise his ability to present and to defend his thoughts on topics of his own choice. Students will be encouraged to devote some of their discussions to such topics as continuing professional education, professional societies, organization of engineering employment, and professional ethics.

Seminars: 2 hours per week
Prerequisite: Registration in final year

Electrical Engineering N-511 (521). Electronics III

A continuation of the material of Electrical Engineering N-412; wave-

shaping circuits and digital logic circuits.

Lectures: 3 hours per week
Laboratory: 3 hours per week
Prerequisite: Electrical Engineering N-412

Electrical Engineering N-521. Semiconductor Physics

Electrons in periodic lattices, intrinsic and extrinsic semiconductors; p-n junctions, rectifiers and transistors; material and devices technology.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Electrical Engineering N-421

Electrical Engineering N-522. Semiconductor Devices Design

Junction and field-effect transistors; surface effects and surface-controlled devices; other semiconductor devices; device technology.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Electrical Engineering N-521

Electrical Engineering N-541. Network Theory II - Introduction to Synthesis

Positive real functions. The synthesis of passive two element kind one and two port networks. Introduction to the synthesis of active RC networks.

Lectures: 3 hours per week
Prerequisites: Engineering Mathematics N-412, Electrical Engineering N-441

Electrical Engineering N-542. Network Theory III - Non-linear Network Theory

Non-linear network elements. Classification of non-linear networks. Formulation of network equations. Numerical methods for the solution of multivariable non-linear equations. Analysis and synthesis of non-linear resistive networks. Application to the biasing of semiconductor circuits.

Lectures: 3 hours per week
Prerequisite: Electrical Engineering N-441

Electrical Engineering N-543. Network Theory IV - Topics in Network Theory

Topics will be chosen to coincide with the common interests of the instructor and students.

Lectures: 3 hours per week
Prerequisites: Electrical Engineering N-541 & N-542

Electrical Engineering N-551 (551). Electromagnetic Wave Propagation

The homogeneous wave equation. Plane wave propagation. Radiating systems. Field theory of guided waves. Transmission lines. Smith chart, impedance matching. Effect of wall losses. Coupled modes and periodic structures. Electromechanical waves on electron beams.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering Mathematics N-413, Electrical Engineering N-451

Electrical Engineering N-552 (552). Microwave Engineering

Circuit theory for waveguiding systems. Impedance transformation and matching. Waveguide discontinuities. Cavity resonators. Microwave filter design. Ferrite devices. The reflex klystron. The magnetron. The travelling wave tube. Parametric amplifiers.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Electrical Engineering N-551

Electrical Engineering N-561 (561). Communication Theory

Principles of amplitude, angle and pulse modulation. Components including modulators, mixers, limiters and demodulators. Representative examples of complete transmission systems. Qualitative treatment of modulation systems in the presence of noise.

Lectures: 3 hours per week
Prerequisite: Engineering Mathematics N-412

Electrical Engineering N-562 (562). Statistical Communication Theory

Transmission and filtering of random signals. Linear mean square optimum filters. Analysis of modulation systems in the presence of noise. Introduction to information theory.

Lectures: 3 hours per week
Prerequisites: Engineering Mathematics N-471, Electrical Engineering N-561

Electrical Engineering N-571 (571). Electrical Power Engineering

Inductance, capacitance, resistance of polyphase transmission lines; current and voltage relations of transmission lines; load flow studies; symmetrical and unsymmetrical faults; power system stability.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Electrical Engineering N-431

Electrical Engineering N-581. Electrical Engineering Project I

The Electrical Engineering project provides an opportunity for each student to carry out a small design project associated with one or more of the specialist elective courses, under the supervision of a faculty member. The nature of the project selected should be such as to require independent study of current technical literature. When feasible the designs will be assessed in the laboratory. Each student is to present a complete report at the end of the project.

Equivalent laboratory time: 2 hours per week
Prerequisite: Registration in final year and in Electrical Engineering N-582

Electrical Engineering N-582. Electrical Engineering Project II

A continuation of Electrical Engineering 581.
Equivalent laboratory time: 3 hours per week.
Prerequisite: Electrical Engineering N-581.

MECHANICAL ENGINEERING

Mechanical Engineering N-421. Heat Treatment of Metals

Science and technology of heat treating of metals; the effect of microstructural changes on the properties of alloys. Solid solution alloys, diffusion. Equilibrium phase diagrams. Kinetics of phase transformations. Thermomechanical treatment of steels. Precipitation hardening. Solidification.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Engineering N-221

Mechanical Engineering N-422. Mechanical Properties of Metals

The mechanisms of deformation and softening and the effects of processing variables of the mechanical properties of metals: cold working, annealing, and hot working of metals. The service capabilities of alloys and their relationship to thermomechanical processing: creep, fracture, fatigue and corrosion of metals and materials. Composite materials.

Lectures: 3 hours per week
Tutorial: 3 hours per week, alternate weeks
Prerequisite: Engineering N-221

Mechanical Engineering N-441 (443). Kinematics of Mechanisms

Geometry of motion and mobility criteria; kinematic analysis and synthesis of linkages; theory of spur gear; helical, worm and bevel gearing; gear trains and differentials; cam kinematics; introduction to analog computing mechanisms.

Lectures: 2 hours per week
Laboratory: 2 hours per week
Prerequisites: Engineering N-212 and N-241, Engineering Mathematics, N-331, Engineering Mathematics N-351, previously or concurrently

Mechanical Engineering N-442 (444). Dynamics of Machines

Kinematic analysis of space mechanisms; static and dynamic analysis of planar mechanisms and gear trains; Euler's equations of motion; gyroscopic forces; dynamic analysis of space mechanisms; balancing of rotating and reciprocating machinery; introduction to mechanical vibrations.

Lectures: 3 hours per week
Laboratory: 3 hours per week
Prerequisites: Engineering Mathematics N-351, Mechanical Engineering N-441.

Mechanical Engineering N-451 (454). Thermodynamics II

Thermodynamic functions and equations; relationships between properties; combustion; introduction to statistical thermodynamics. Applications of thermodynamics to power production and utilization systems.

Lectures: 3 hours per week

Laboratory: 3 hours per week, alternate weeks
Prerequisite: Engineering N-351

Mechanical Engineering N-452 (455). Heat Transfer I

Steady state and transient heat conduction, numerical methods for two-dimensional steady state heat conduction. Radiation heat exchange between black bodies, between grey bodies and from gases, vapours and flames.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Engineering Mathematics N-411

Mechanical Engineering N-521 (521). Manufacturing Processes

The various processes for shaping materials are studied from both theoretical and practical aspects. The limitations imposed by the properties of the raw materials and the effect of processing on the final properties of the products. Casting. Welding. Non-destructive testing. Powder technology. Mechanical forming: shear line theory, extruding, forging, rolling, drawing, bending. Metal cutting, machinability, non-traditional techniques, metrology. Finishing processes. Plastics processing: extrusion, molding, vacuum forming, lamination. Industrial practice is observed through field trips.

Lectures: 3 hours per week
Tutorial: 3 hours per week, alternate weeks
Prerequisites: Mechanical Engineering N-421, N-422 previously or concurrently

Mechanical Engineering N-541 (541). Machine Design I

Failure of mechanical elements under dynamic loading; principles of design synthesis; shafting; bolted and welded joints; mechanical springs; clutches; brakes and couplings; anti-friction bearings; theory of lubrication and journal bearings; flexible mechanical elements.

Lectures: 3 hours per week
Laboratory: 3 hours per week
Prerequisites: Engineering N-441, Mechanical Engineering N-442

Mechanical Engineering N-542 (542). Machine Design II

Design of gears; design of gear drives; introduction to design of machine tools; introduction to optimum design of mechanical systems; technical talks on selected topics in mechanical design; machine design project.

Lectures: 3 hours per week
Laboratory: 3 hours per week
Prerequisite: Mechanical Engineering N-541

Mechanical Engineering N-543 (543). Mechanical Vibrations

Transient vibrations under impulsive shock, and arbitrary excitation; normal modes, free and forced vibrations. Multi-degree of freedom systems, influence coefficients, orthogonality principle, numerical methods. Continuous systems; longitudinal torsional and flexural free and forced vibrations of prismatic bars. Lagrange's equations. Non-linear vibrations. Vibration measurements.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering Mathematics N-411, Engineering N-372, Mechanical Engineering N-442

Mechanical Engineering N-551 (557). Thermodynamics III

A continuation of Thermodynamics II including generalized thermodynamic relationships and charts, reactive and non-reactive mixtures, external forces, more complex energy conversion systems.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisite: Mechanical Engineering N-451

Mechanical Engineering N-552 (558). Heat Transfer II

Review of momentum transfer, free and forced convection heat transfer, dimensional analysis as applied to convection heat transfer configurations, heat exchangers, introduction to mass transfer.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering N-461, Mechanical Engineering N-452

Mechanical Engineering N-553 (554). Environmental Control

The effect of air temperature and humidity on physiological comfort, overall heat-transmission coefficients across building sections, heating load calculations, the effect of solar radiation on air-conditioning load, cooling load calculations, heating, air-conditioning and ventilating systems, design of piping and duct arrangement.

Lectures: 3 hours per week
Prerequisite: Mechanical Engineering N-452 & N-551.

Mechanical Engineering N-554 (556). Statistical Thermodynamics

Microscopic study of thermodynamics and the properties of substances. Waves; statistical and quantum mechanics; thermodynamic probability; work and heat; reversible and irreversible processes; ideal gases.

Lectures: 3 hours per week
Prerequisites: Engineering Mathematics N-311 & N-371, Mechanical Engineering N-551

Mechanical Engineering N-561 (551). Gas Dynamics

Review of one-dimensional, compressible flow. Normal and oblique shock waves; Prandtl-Meyer flow; combined effects in one-dimensional flow; non-ideal gas effects; multi-dimensional flow; linearized flows; method of characteristics. Selected experiments in supersonic flow, convergent-divergent nozzles, hydraulic analogue and Fanno tube.

Lectures: 3 hours per week
Laboratory: 3 hours per week, alternate weeks
Prerequisites: Engineering N-461, Mechanical Engineering N-451

Mechanical Engineering N-562 (553). Fluid Machinery

Momentum analysis for fluid propulsion, moment-of-momentum and Euler turbine equations, thermodynamics of gas flow, analysis of blades and impellers, performance of incompressible and compressible turbo-machinery.

Lectures: 3 hours per week
Prerequisites: Engineering N-461, Mechanical Engineering N-451

Mechanical Engineering N-581 (581). Design or Experimental Project

A mechanical engineering design, simulation or experimental project appropriate to the senior level carried out under the supervision of a faculty member. A complete report is required at the end of the project.

Equivalent Laboratory time: 6 hours per week
Prerequisite: Registration in final year

COMPUTER SCIENCE

Computer Science N-211 (211). Introduction to Computers and Computing

Problem solving, algorithms, computers and programming. An introduction to the essential features of computers and computing systems. Implementation of algorithms in machine language, assembly language (for a hypothetical machine) and Fortran. Detailed specifications of Fortran with numerical and non-numerical applications.

Lectures: 3 hours per week, 1 term
Laboratory: 1½ hours per week, 1 term
NOTE: – Students who have credit for Computer Science 011 may not take this course for credit.

Computer Science N-212 (212). Computer Programming II

The course covers discussion of the following basic subjects: the logical design of computers, including registers and addressing, and their operation; the basic instructions and their use in an assembler language; the design of a simple operating system which deals with calling compilers, loading, executing and interrupts. An introduction to the data processing field and use of the COBOL language.

Lectures: 3 hours per week, 1 term
Laboratory: 1½ hours per week, 1 term
Prerequisite: Computer Science N-211 or equivalent

Computer Science N-401 (401). Computer Organization

Boolean algebra and combinational logic. Basic digital circuits. Data representation and transfer. Digital arithmetic. Digital storage and accessing. Control functions. Input-output facilities. System organization. Reliability. Unorthodox organizations. Evaluation of solutions.

Lectures: 3 hours per week, 1 term
Prerequisites: Computer Science N-212

Computer Science N-402 (402). Computer Systems

Batch processing systems: translation, loading and execution; communication between program units. Special features: buffers; overlapped

channels; interrupt facilities; input - output control; memory protection. Addressing techniques; paging. Multiprogramming and multiprocessing systems; time-sharing and real-time applications.

Lectures: 3 hours per week, 1 term
Prerequisite: Computer Science N-401

Computer Science N-403 (403). Programming Languages

Machine language. Assemblers, symbol tables and macro-instructions. Problem-oriented languages: structure of algorithmic languages; compiler organization; statement decomposition; syntax analysis; code optimization. Principles of list processing and string manipulation languages.

Lectures: 3 hours per week, 1 term
Prerequisite: Computer Science N-402

Computer Science N-411 (411). Principles of Data Processing

Requirements of techniques to handle large scale data processing applications; control; tree theory; decision tables; interpretation and validity of results; information retrieval.

Lectures: 3 hours per week, 1 term
Prerequisite: Computer Science N-212.

Computer Science N-412 (412). Data and File Structures I

A Model of Data Processing System. Basic concepts of data. Trees and linear lists. Hierarchic and Associative Structures. Storage Structures and Storage Management. Sorting.

Lectures: 3 hours per week, 1 term
Prerequisites: Computer Science N-212 or consent of Instructor

Computer Science N-413 (413). Data and File Structures II

Multilinked structures, techniques of file structuring. File size and access time estimating. Data and File Management Systems. Searching.

Lectures: 3 hours per week, 1 term
Prerequisite: Computer Science N-412 or consent of Instructor

Computer Science N-421 (421). Introduction to the Theory of Automata

Finite State Machines, state transition diagrams and tables. Neutral Networks. Regular Expressions, Kleenes Theorem. Computability Turings Theorem. Turing Machines. Universal Machines Relationships to the theory of recursive functions.

Lectures: 3 hours per week, 1 term
Prerequisite: Computer Science N-402

Computer Science N-430 (430). Logical Design and Switching Theory

Symbolic logic and Boolean algebra for description and analysis of switching circuits; error detecting and correcting codes; storage elements defined logically; basic sequential circuits; digital design principles.

Lectures: 3 hours per week, 1 term
Prerequisite: Mathematics 004 & 005.

Computer Science N-440 (440). Heuristic Programming

The definition of heuristic vs. algorithmic methods; rational heuristic approach; non-numeric symbolic programming; self-organizing systems; heuristic pro-techniques including a list of the uses of list processing languages; survey of examples from representative application areas including the work in artificial intelligence, musical compositions, and other advanced computer application areas.

Lectures: 3 hours per week, 1 term
Prerequisite: Computer Science N-403

Computer Science N-450 (450). Discrete System Simulation

A comparison of simulation techniques - discrete, continuous and hybrid. Queueing models, analysis of data. Model building. Review of Simulation Languages. Application to business problems and operations research.

Lectures: 3 hours per week, 1 term
Prerequisites: Mathematics N-351, Computer Science N-403

Computer Science N-471 (471). Digital Computer Programming and Numerical Methods

A course in computer programming oriented to senior students in the Sciences. This course will teach the students Fortran programming with applications in numerical analysis and advanced mathematical techniques. Lectures and laboratory.

NOTE: — Students credited with Computer Science N-211 and those entering the University with its equivalent may not take Computer Science N-471 for credit.

Lectures: 3 hours per week, 1 term
Prerequisite: Mathematics N-270 or N-271 previously or concurrently

Computer Science N-490 (490). Seminar and Project

A series of seminars presented by faculty members and students concerning their particular interest. Students will also work on a project in conjunction with a faculty member.

Seminar: 1 hour per week, 1 term
Project: 2 hours per week, 1 term
Prerequisite: Consent of Faculty member responsible.

IX
mature
student
qualifying
programme

MATURE STUDENT QUALIFYING PROGRAMME

I AIMS

In keeping with the traditional open policy of Sir George Williams towards older students, the Mature Student Qualifying Programme is designed to enable students who are twenty-one years of age or older to prepare themselves for entry to the new post-CEGEP undergraduate programmes. The University assumes that the age of the student will have allowed him or her to acquire informally some of the general education given to younger students in CEGEP, and concentrates on the knowledge and skills which will be needed to tackle a given undergraduate programme. Successful completion of the appropriate group of six full courses or the equivalent in half-courses (six credits) will make the student admissible to the corresponding undergraduate programme. The Mature Student Qualifying Programme will be offered in the Evening Division only, starting in September, 1971.

II ADMISSION REQUIREMENTS

Minimum Age Requirement

All persons 21 years of age or older are eligible to apply for admission to the Mature Student Qualifying Programme. Candidates must be at least 21 years of age by June 1st or September 1st of the year they wish to enter the Summer Session or Winter Session respectively.

A BIRTH CERTIFICATE OR OTHER ACCEPTABLE PROOF OF AGE MUST BE SUBMITTED WITH EVERY APPLICATION FOR ADMISSION.

The English Language Proficiency Test

Any student whose first language is other than English and whose schooling has not been taken in the English language must demonstrate that he is proficient in the English language by writing the Sir George Williams University English Language Test.

Those whose test results show a need for special instruction will register for special courses. (see p.47)

Admission with Advanced Placement

Applicants who have attended a Senior Matriculation programme, College, University and/or other equivalent institutions of higher learning are required to have their records of study submitted to the Office of Admissions even though no credit may have been earned at an institution. Two copies of each transcript are required. Former CEGEP, University, and other such transcripts are not to be submitted by you but must be sent directly to this Office from the Registrar of your previous institution. Although an applicant's records from several institutions may be summarized on one transcript, an applicant will not be considered until two official transcripts from each institution attended have been received. Readable photocopies of Senior Matriculation Certificate results are acceptable.

Each request for transfer credit will be considered on its own merits. It should be noted that certain conditions are attached to the granting of credit for courses completed elsewhere.

Residence Requirement

A minimum of three credits must be completed in the Mature Student Qualifying Programme at Sir George Williams University.

Guide to Placement

(a) Without High School Graduation
    With Junior Matriculation
    With Partial Senior Matriculation or equivalent   6-credit programme required

(b) With Senior Matriculation or one year of undergraduate study (beyond Junior Matriculation)   3 to 6 credits required, depending on specific course requirements - minimum of 3 credits

Criteria for Admission

Applicants to the Mature Student Qualifying Programme are not required to write entrance tests, unless requested.

Application for Admission

It is recommended that application for admission be made as early as possible on forms provided by the Office of Admissions. Academic certificates and other supporting documents not available at the time of application must be submitted as soon as they become available.

Application Fee

All applications for admission must be accompanied by an application fee of $10 (Canadian), payable by certified cheque or money order. It is not refundable under any circumstances nor will it be applied towards tuition fees.

Dates of Entry for New Mature Student Qualifying Programme Students

Students are admitted as Evening students to the Summer Session (May to August) and to the Winter Session (September to April) in May and September respectively.

Deadline for Receipt of Applications

Applications for admission to the Mature Student Qualifying Programme must be received by the Office of Admissions according to the following dates:

SUMMER SESSION (June to August)   APRIL 1
WINTER SESSION (September to April)   JUNE 1

III PROGRAMME STRUCTURE

Students will register in one of the following programmes: Pre-Arts (including Fine Arts), Pre-Science, Pre-Commerce, Pre-Engineering. Programmes will consist of required courses and electives. Requirements of the various programmes are as follows (where specific courses are listed, titles will be found in Section IV below):

1. Pre-Arts (including Fine Arts)
General requirements:
One credit in English (language or literature) and five electives, not more than three of which may be taken outside the Faculty of Arts.

Specific requirements for different undergraduate programmes in Arts:

a. Anthropology, Applied Social Science, Economics, Geography, Political Science, Sociology: one credit in Mathematics.

Note: It is strongly recommended that students planning to specialize in Economics take Mathematics 103* and 105*.

b. Art: two credits in studio work, one credit in Art History, and one additional credit in Art, Cinema, Music or Theatre Arts.
c. Cinema, English, French, Theatre Arts: one credit in English Literature (in addition to the general requirement) and one credit in French.
d. German, Greek, Hebrew, Italian, Latin, Russian, Spanish: one credit in English Literature (in addition to the general requirement), one credit in French, and at least one credit (preferably two) in the language(s) to be studied.
e. Canadian Studies, Education, History, Humanities of Science, Philosophy, Russian Studies, Urban Studies: no special requirements, but students should consult with the appropriate Department Chairman or programme coordinator.
f. Psychology: Mathematics 102*, 103*, 105*, 107*, Biology 101*; Psychology 111.
g. Religion: one credit in Philosophy.

2. Pre-Science
Mathematics 102*, 103*, 104*, 105*. Biology 101*; Chemistry 101*, 102*; Physics 101*, 102*, 103*; one elective.

Mathematics 101* is required of those not having high school intermediate mathematics (functions), and Biology 102* is required of those planning to enter programmes in the Biological Sciences; where taken, these courses will count towards the elective credit. Computer Science 111* is recommended as an elective.

3. Pre-Engineering
As for Pre-Science, but replacing Biology 101* with Computer Science 111*.

4. Pre-Commerce
Mathematics 102*, 103*, 105*, 106*, 107*; one credit in English (language or literature); one credit in Humanities or Social Science; one and one half elective credits.

* Half course

Mathematics 101* is required of those not having high school intermediate mathematics (functions).

It should be noted that specialization at the undergraduate level in Mathematics may be taken either in Science (Pre-Science programme required) or in Arts (Mathematics courses in the Pre-Science programme required). Specialization in Psychology may be taken either in Arts (Pre-Arts programme with specific requirements) or in Science (Pre-Science programme with Psychology as elective). Specialization in Economics may be taken in either Arts or Commerce.

IV COURSES

Full courses, each worth one credit, are given from September to May; half courses (identified by *) are given from September to December, or from January to May, and are worth one half credit. Both full and half courses will normally be offered in the Evening Summer Session, starting in 1972.

The courses listed below are offered by the respective faculties. Inclusion of a course in this list does not guarantee that it will be given every year.

NOTE: Descriptions for courses with an 'N' number (e.g. N-211) will be found in the undergraduate part of this announcement, under the appropriate departmental heading.

FACULTY OF ARTS

A. Humanities of Science

Humanities of Science 110 - Contemporary Image of Science

This course provides a broad thematic look at the world of contemporary science and how it relates to our everyday lives. A multi-media approach is used and all material is given in terms of the educated non-scientist. The objective is to gain some idea of the totality of science without the detail. Basic notes are supplied for the natural sciences content of the course. Science is presented as one philosophic approach to knowledge among others. Its relations to the arts, humanities and society are discussed. Fundamental, well-known concepts and principles are emphasized rather than professional detail. The subject matter includes the scientific method, space age, illusion and unreality of matter, evolution of earth, life and man, science and society today and in the near future. (full course).

Humanities of Science 111 (N-211) - Social History of Science (full course)
Humanities of Science 171 (N-271) - Science and Society (full course)

B. Humanities Division

ART

Art 101 - Visual Arts Orientation 1

A studio course dealing with basic media, fundamental techniques and core concepts in two or three dimensions. Lectures and studio periods. (full course).

Art 102 - Visual Arts Orientation II
Prerequisite: Art 101. Individual problems in the visual arts. Lectures and studio periods. (full course).

Art 140 (N-240) - Key Monuments in Art History (full course)
Art 149 (N-249) - Canadian Sculpture and Architecture (full course)

CLASSICS

Classics 121 (N-221) - History of Greece and Rome (full course)

ENGLISH

English 100 (N-200) - English Language (non-credit)
      101 (N-201) - English Language and Composition (Full course)

English 111 - The Communication of Ideas

A course in language skills and research techniques for the student who has reasonable control of his writing. The approach will be from the point of view of the writer who seeks a desired response from the audience to whom he addresses himself and of the researcher who must prepare a written account of his work for business or academic purposes. (Full course)

English 121 - A Survey of English Literature

A course in the development of English literature from Chaucer to the present. (Full course).

Students who plan to take a Major or Honours programme in English are strongly urged to take English 121.

English 131 * - The Dynamics of English

A course to improve expression in written and spoken English. Emphasis will be placed on grammar, sentence structure, mechanics, and other fundamentals of good usage. (Half course). 1 section.

English 132 * - Writing Themes about Literature

A course in the exploration of the meaning, structure, style, and background influences of literary works, with the aim of teaching students to write unified and well organized analyses on specific elements in those works. (Half course).

English 133 * - Illusions of Reality
A study of prose fiction, thematically designed. (Half course).

English 134 * - Varieties of Voices
A study of drama and poetry, thematically designed. (Half course).

English 161 * (N-261) - Introduction to Poetry (Half course)
      166 * (N-266) - The Short Story. (Half course)

FRENCH

French 101 (N-201) - Beginners' French (Full course)
111 (N-211) - Introduction to College French (prerequisite: French 101 or equivalent) (Full course)
114 (N-214) - French Language and Composition (prerequisite: French 111 or equivalent) (Full course)
121 (N-221) - Introduction to French Literature (prerequisite: French 114 or equivalent) (Full course)
122 (N-222) - Modern French Literature (prerequisite: French 111 or equivalent) (Full course)
131 (N-331) - French Canadian Literature & Culture (prerequisite: French 111 or equivalent) (Full course)

GERMAN

German 110 (N-210) - Introductory Course in German (Full course)
111 (N-211) - Advanced German Language and Stylistics (prerequisite: German 141 or equivalent) (Full course)
115 (N-215) - German for Reading Knowledge (Full course)
141 (N-241) - German Language and Literature (prerequisite: German 110 or equivalent) (Full course)

GREEK

Greek 110 (N-210) - Introductory Course in Greek (Full course)
141 (N-241) - Greek Language and Literature (prerequisite: Greek 110) (Full course)

HEBREW

Hebrew 110 (N-210) - Introductory Course in Hebrew (Full course)
115 (N-215) - Biblical Hebrew (Full course)
141 (N-241) - Intermediate Course in Hebrew (prerequisite: Hebrew 110 or equivalent) (Full course)

HUMANITIES

Humanities 110 - General Course in Humanities
It is the purpose of this course to enlarge and enrich the student's comprehension of his cultural heritage by the study of Man as a unique creative being. The sources for this study of man are drawn primarily from the fields of history, philosophy, religion, literature and the arts with a view toward examining those experiences and ideas of enduring power which have shaped the nature of modern man from the age of Greece to the present century. (Full course).

ITALIAN

Italian 110 (N-210) - Introductory Course in Italian (Full course)
141 (N-241) - Intermediate Italian (prerequisite: Italian 110 or equivalent) (Full course)

LATIN

Latin 110 (N-210) - Beginners' Latin (Full course)
140 (N-240) - Latin Composition and Translation (Full course)
141 (N-241) - Latin Literature (Full course)

LINGUISTICS

Linguistics 121 (N-221) - Introduction to Linguistics (Full course)

MUSIC

Music 135 (N-235) - Materials, Structure and Media (prerequisite: permission of the instructor) (Full course)

PHILOSOPHY

Philosophy 110 (N-210) - Problems of Philosophy (Full course)
111 (N-211) - Philosophical Classics (Full course)
121 (N-221) - Introduction to Logic and Philosophy of Science (Full course)
131 (N-231) - Introduction to Ethics (Full course)
171 (N-271) - Contemporary Philosophy (Full course)
173 (N-273) - Existentialism (Full course)

RELIGION

Religion 113 (N-213) - The Religions of the World (Full course)
131 (N-231) - Religion, Ethics and Society (Full course)
141 (N-241) - Religion, Science and Philosophy (Full course)
151*(N-251) - Biblical Studies I: Old Testament Studies (Half course)
152 * (N-252) - Biblical Studies II: New Testament Studies (Half course)
162 (N-262) - Judaic Studies I: The History of the Jewish People (Full course)

RUSSIAN

Russian 110 (N-210) - Introductory Course in Russian (Full course)
115 (N-215) - Reading Course in Russian (Full course)
131 (N-231) - Advanced Russian Language and Stylistics (prerequisite: Russian 141 or equivalent (Full course)
141 (N-241) - Intermediate Russian (prerequisite: Russian 110 or equivalent (Full course)

SPANISH

Spanish 110 (N-210) - Introductory Course in Spanish (Full course)
121 (N221) - Spanish Civilization (prerequisite: Spanish 141 or equivalent (Full course)
141 (N-241) - Spanish Language and Literature (prerequisite: Spanish 110 or equivalent (Full course)

*Half course

C. Social Science Division
ANTHROPOLOGY
Anthropology 111 (N-211) - Introduction to Anthropology (Full course)

ECONOMICS
Economics 111 (N-211) - Introduction to Economics (Full course)
112 (N-212) - Introductory Economics (prerequisites: Mathematics 101 * and 102 * or equivalent)(Full course)
130 (N-330) - Introduction to Economic History (Full course)

GEOGRAPHY
Geography 101 - The Ecology of Man.
A general introduction to the relationship between physical and cultural distributions of the Earth's surface. Global patterns of human, economic and natural resources will be examined. (Full course)

Geography 111 (N-211) - Introduction to Human Geography (Full course)
171 (N-271) - Introduction to Physical Geography (Full course)

HISTORY
History 110 (N-210) - History of Europe in the Modern World (Full course)
121 (N-221) - History of Canada since 1534 (Full course)
151 (N-251) - History of the United States (Full course
161 (N-261) - Asia and Africa in Modern History (Full course)

POLITICAL SCIENCE
Political Science 131 (N-231) - Public law (Full course)
140 (N-240) - Comparative Politics (Full course)
170 (N-270) - International Relations (Full course)

PSYCHOLOGY
Psychology 111 (N-211) - Introductory Psychology (Full course)

SOCIAL SCIENCE
Social Science 101 * - Mass Media and Society
This course will study the development of contemporary communication systems and their effect on society. The press and broadcasting will be explored and emphasis will be placed on news reporting, propaganda, etc. The course consists of televised lectures, reading assignments and class discussions. (Half course).

Social Science 102 * - Public Communications in Canada
This course will study the history and development of Canadian broadcasting and the part it has played in the growth of the nation. The course consists of televised lectures, reading assignments and class discussions. (Half course).

* Half course

Social Science 110 - General Course in the Social Sciences
This course has a dual purpose: to introduce the student to some of the basic concepts and subject matter of the various Social Sciences and to demonstrate their interrelation; and to provide the student with some knowledge of contemporary society and the social problems which confront it. (Full course).

SOCIOLOGY
Sociology 111 - Introduction to Sociology
Folkways, mores, roles, status, institution, culture and the chief concepts discussed. Personality formation, personal disorganization and social change also are dealt with, as are theory, past and current research and historical background. (Full course).

FACULTY OF SCIENCE
BIOLOGY
Biology 101 * - General Biology I
A survey of the general principles of biology; chemical basis of life, cell organization and control, elements of anatomy, physiology, morphogenesis, heredity and evolution. Lectures and laboratories. (Half course).

Biology 102 * - General Biology II
Prerequisite: Biology 101. Comparative anatomy and physiology, genetics, embryology and cellular metabolism. Elements of ecology and field biology. Lectures and laboratories. (Half course).

CHEMISTRY
Chemistry 101 * - General Chemistry I
Prerequisite: "Chemstudy" Chapters 1-13, or equivalent, or permission of the department. Classical atomic theory. Modern atomic theory. Periodic table. Chemical bonding. Solid state. Solutions. Electrochemistry. Lectures and laboratories. (Half course).

Chemistry 102 * - General Chemistry II
Prerequisite: Chemistry 101. Review of equilibrium. Ionic equilibrium (solubility product). Introduction to Buffer Solutions. Thermodynamics. Organic Chemistry. Lectures and laboratories. (Half course).

GEOLOGY
Geology 111 (N-211) - General Geology (Full course)
121 (N-321) - Earth History and Stratigraphy (prerequisite: 111) (Full course)
131 * (N-231) - Mineralogy (Half course)

MATHEMATICS
General Prerequisite and Equivalents
The general prerequisite for all Mature Student Qualifying Programme Math-

* Half course

ematics courses is Mathematics 101. Students will be exempt from this course with high school papers in:

a) Algebra, Geometry, Trigonometry, Intermediate Algebra.
b) Algebra, Geometry, Functions.

Students with good grades in Algebra, Geometry, Trigonometry may apply to the Mathematics Department for exemption.

Mathematics 101 * - Transcendental Functions
   Sets. Field of real numbers. Inequalities. Functions and Graphs. Trigonometric, exponential and logarithmic functions. (Half course).

Mathematics 102 * - College Algebra
   Pre- or Corequisite: Mathematics 101 or equivalent. (See "general prerequisite" above). Proofs and implications. The natural numbers and the integers. Mathematical induction. Divisibility, the Euclidean Algorithm, primes, the Fundamental Theorem of Arithmetic. Sequences and progressions. Complex Numbers, polynomials, the Fundamental Theorem of Algebra. Combinatorial Mathematics, the Binomial Theorem. Systems of equations, determinants, Cramers' Rule. (Half course).

Mathematics 103 * - Differential and Integral Calculus I
   Prerequisite: Mathematics 101 or equivalent. (See "general prerequisite" above). Functional Notation. Limits and Continuity. Differentiation of Polynomials. The power, product, quotient and chain rules. Implicit differentiation. Higher derivatives. Mean Value Theorem, Rolles Theorem. Maxima and Minima. Applications: Tangents to plane curves, related rates. The differential, use in finding approximations. Indefinite and definite integrals, areas and volumes. (Half course).

Mathematics 104 * - Vector Analysis and Analytical Geometry
   Prerequisite: Mathematics 101 or equivalent. (See "general prerequisite" above.) The Algebra of vectors in two and three dimensional Euclidean vector spaces. Inner and cross products of vectors. Algebraic and vector equations of curves in the plane and in space. Elementary study of surfaces in space. Curves and surfaces in parametric form. Polar, spherical and cylindrical coordinates. (Half course).

Mathematics 105 * - Differential and Integral Calculus II
   Prerequisite: Mathematics 103. Differentiation and integration of Trigonometric functions. Derivatives of Inverse Trigonometric functions, Logarithmic functions and exponential functions. Methods of integration by parts, by substitution, by Separation into partial fractions. Improper integrals. L'Hopitals' Theorem. Series: Convergency tests, Maclaurin and Taylor Theorems. (Half course).

* Half course

Mathematics 106 * - Matrices and Linear Algebra
   Prerequisite: Mathematics 102. Operations on Matrices. Determinants, Cramers' Rule. Systems, rank. The inverse matrix. The Gauss Jordan Method. Mappings, matrix Transformation. Linear Transformations. Characteristic Values vectors. Quadratic forms. (Half course).

Mathematics 107 * - Probability and Statistics
   Prerequisite: Mathematics 101 or equivalent. (See "general prerequisite" above.) Elementary Probability, permutations and combinations. Binomial and Normal distribution. Analysis and organization of Statistical data. Tests of hypotheses. Confidence limits. Introduction into Linear regression and Correlation. (Half course).

PHYSICS

Physics 101 * - Mechanics I
   Prerequisites: Mathematics 101 previously; Mathematics 103 previously or concurrently. Dynamics of translation and rotation. Theorems of conservation (momentum, inertia, kinetic energy). Gravitation (laws of Kepler, variation in the gravitational field, simple planetary motion). Relativity. Lectures and laboratories. (Half course).

Physics 102 * - Electricity and Magnetism I
   Prerequisite: Physics 101; Mathematics 103 previously or concurrently. Electrical charge and Coulomb's Law. Electric field. Potential. Capacity. Steady current (Circuits. Kirchhoff's Laws). Magnetic field. Introduction. Lectures and laboratories. (Half course).

Physics 103 * - Waves and Modern Physics I
   Prerequisites: Physics 101, Mathematics 103. Oscillation (Simple and damped harmonic motion). Wave propagation. Superposition. Stationary waves. Doppler effect. Interference. Diffraction. Photoelectric effect. Compton effect. Bohr's atom. Radioactivity, fission, fusion. Lectures and laboratories. (Half course).

Physics 110 (N-210) - Great Discoveries in Modern Physics (Full course)

FACULTY OF COMMERCE & ADMINISTRATION
ADMINISTRATION

Administration 101 * - Introduction to Administration
   This course is designed to develop in students a basic understanding of the role of administration in our society (the efficient organization and employment of people in the techno-structure). (Half course).

Administration 102 * - Perspective on Business
   This course is designed to review the historical development of business (in Canada in particular) and to examine the relationships between the firm (ma-

* Half course

nagement) and the owners, the employees, the customers, the government and the community. Further, to study some of the problems facing Canadian business today: the de-humanizing aspect, pollution problems, large vs. small firms, foreign ownership, competition, etc. (Half course).

FACULTY OF ENGINEERING

Computer Science 111 * (N-211) - Introduction to Digital Computer Programming (Half course)

V PARTIAL COURSE STUDENTS

Where places are available, after regularly admitted students have been registered, individuals may register on an individual course basis as partial students in courses for which they have the qualifications. Registration dates will be published in the daily press in the month of August.

VI ADMINISTRATIVE STRUCTURE

There is no separate administrative structure for the Mature Student Qualifying Programme. Each faculty is responsible for its own programme and each academic department for the courses which it offers.

VII SIR GEORGE WILLIAMS HIGH SCHOOL

Applicants to the Mature Student Qualifying Programme who wish to correct deficiencies in certain disciplines in which they did not matriculate from high school, (for example, Elementary Mathematics), should register for courses in the Sir George Williams Evening High School. Inquiries concerning the High School, should be directed to the Headmaster, Sir George Williams High School, 1435 Drummond Street, Montreal 107, Quebec.

For information on Regulations, Fees, Student Services, Guidance Services, etc., see the undergraduate section of this announcement.

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* Half course

X
academic
regulations

ACADEMIC REGULATIONS

These regulations are effective as of September 1st, 1971 and apply to students entering the three-year university program, MSQP (Mature Student Qualifying Programme) and all Partial students. All others are governed by the academic regulations published in the 1970-71 University Calendar.

ACADEMIC YEAR

Winter Session
The day and evening winter session of the University is divided into two terms of fifteen weeks each including the examination period. Dates marking the opening and closing of these terms are found in the Calendar of Events.

Summer Session
A nine-week session is operated during the summer in the Evening Division primarily for Evening Division students.

Day Division students may not register during the normal evening registration schedule without permission of Faculty Council. Following the normal registration period for Evening Division students, those regularly enrolled in the Day Division will be permitted to register in courses in which places remain. Registration will take place following the close of evening registration.

Special Day Summer Session
Courses in various fields of study are held during the day throughout the summer and are open to both Day and Evening Division students.

Summer Sessions and Special Day Summer Sessions are considered part of the following Winter Session for record purposes.

RESIDENCE REQUIREMENTS

1. In addition to the specified courses, there is a residence requirement of one year for any degree, defined as follows:
   A student in the Faculties of Arts, Science or Commerce must complete the last five full credits of the courses of the degree requirements at S.G.W.U. Engineering students must complete the final ten half-credit courses of the required departmental degree programs in residence at S.G.W.U.
2. Any student who already possesses one degree must complete, at S.G.W.U., a *minimum* of two years of residence in order to earn a second degree at the Bachelor's level. This regulation applies whether the first degree was earned at S.G.W.U. or at some other university.
3. Any student seeking to transfer to S.G.W.U. after having failed at another university or after having compiled an unsatisfactory record at another university must fulfill the residence requirements stipulated

for him if he is admitted. In general, a *minimum* of two years of residence will be required for any degree.

COURSE LOAD

Winter Session

Day Division
The course load varies according to the faculty in which the student is enrolled. Students are advised, however, that a four credit course load is the minimum any Day Division student must carry in any winter session.

ARTS
First year students in the Faculty of Arts will take a maximum of five credits. A student may take six courses during one or both of his final two winter sessions providing:
a) There are no failures in the previous year (minimum, five-credit pro-program) and,
b) The average grade of the previous year (minimum, five-credit program) is 'B'.

SCIENCE
Students enrolled in the Faculty of Science will normally register for a maximum of five credits each winter session.

COMMERCE
A student may register for a maximum of six courses in any winter session.

ENGINEERING
See under Engineering Faculty - p. 253.

Evening Division
Students in this division may register for a maximum of three full credit courses or their equivalent equally divided between the terms.

Summer Sessions
Students may not take (without permission of their Faculty Council) more than two credits of work during a summer session. This regulation applies to students registering in courses offered in the Evening Division, Special Day Summer Sessions, or in a combined program consisting of courses offered in either division. The course load for Special Day Summer Sessions may be restricted by Departmental regulations.

Day students are reminded again that they may not register during the regular evening registration period for the Evening Summer Session unless prior permission of Faculty Council has been granted.

REGISTRATION PROCEDURES
1971-72

New undergraduate students are eligible to register for courses provided they have fulfilled all admission requirements and have been formally notified of acceptance. The letter of acceptance will also contain the instructions for proper registration and must be presented at the time of registration.

Former undergraduate and partial students of the past academic year will be mailed registration material. All former students not registered for the past academic year and new partial students must pick up appointment cards at the University Records Office. These are available in early August.

All students must register in person or by proxy at the time specified on the Registration Appointment Card. Students who wish to discuss their course selections and program of study may also do this during the registration period.

Payment of tuition fees is included with the registration process in conjunction with the Office of the Treasurer.

COURSE CHANGES, ADDITIONS, WITHDRAWALS

Students may withdraw from a course or from the University without academic penalty prior to the deadlines indicated below. They are required to notify the Records Office in person or in writing and give their reasons for withdrawing. Students must present the copy of their registration contract when making course withdrawals, changes or additions. Failure to attend classes or notification to instructors does not constitute a formal withdrawal from the University.

Final withdrawal date for first-term half courses is October 27. Final withdrawal date for full-year courses and second-term half courses is February 23. Evening Summer Session course withdrawals must be effected by June 12. For procedures covering financial adjustments, see Section IX .

Full Courses

Course changes must be effected by September 24. Evening Summer Session course changes must be effected by June 2.

Half Courses

For the first term and second term, course changes must be effected within the first week of classes in the appropriate term although second-term courses may also be added during the course change period immediately following fall registration. Note that no half term course may be added after the first week of classes in the appropriate term. Evening Summer Session course changes must be effected by June 2.

Note that section changes are considered course changes and will thus be assessed.

EXAMINATIONS AND ADVANCEMENT

A university degree certifies that its holder has attained a measurable level of achievement, as established by a recognized system of evaluation. It is consequently required that the performance of each student in each course be evaluated by the instructor (or instructors) responsible for the course.

The final grade which assesses the performance of each student in each course will take into account the total measurable performance of the student in that course. Specifically, the grade will be given on the basis of one or more of the following:

1. Assigned work, term papers, projects, etc.
2. Class participation, which in the case of certain disciplines may justify an attendance requirement.
3. Progress tests.
4. Laboratory tests and/or laboratory work.
5. Mid-term and/or final examinations.

Where appropriate, level of written expression may be given consideration in determining the final grade.

GRADING SYSTEM

Grades are awarded according to the following system:

Passing Grades

A   Excellent
B   Very Good
C   Acceptable
D   Marginal
S   Credit (late completion of term work or passed supplemental examination)

Failing Grades

F   Failed course - may write supplemental examination if eligible according to Failure Regulations.

Inc   Term work incomplete - may complete term work if eligible according to University regulations.

Abs   Absent from final examination - may write supplemental examination if eligible according to Failure Regulations.

F-Inc   Failed course, term work incomplete - may write supplemental examination and complete term work if eligible according to University regulations.

Abs-Inc Absent from final examination, term work incomplete - may write supplemental examination and complete term work if eligible according to Failure Regulations.

R   Failed course or absent from examinations, term work incomplete and/or unsatisfactory attendance where applicable - must repeat course for credit if permitted by Failure Regulations.

All grades remain permanently on the records. All final grades (including F, R, Inc., Abs. whether cleared later or not) are reported on transcripts.

FAILURE REGULATIONS

Failures

Failures include the grades F, Abs., Inc. and R.

Failed Students

1. *Faculties of Arts, Science and Commerce & Administration*

   (a) Any student who fails courses equivalent to more than two full credits before obtaining five full credits on record or who fails courses equivalent to more than four full credits before obtaining ten full credits on record is a failed student. To re-register such a failed student must obtain permission from the Dean of his Faculty.

   (b) Any student who fails courses equivalent to more than five full credits is a failed student. Such a failed student may not apply for re-admission.

   Note: Students transferring from another university or between faculties at this University with previous failures may be subject to adjustments to the permissible number of failures for courses taken at this university. Students will be advised of this adjustment at the time of their transfer.

   (c) Failed students may not write supplemental examinations nor complete courses graded Inc.

   (d) Failed students who obtain permission to re-register may be subject to specified course loads at the time of their re-admission.

2. *Faculty of Engineering*

   (a) Failed students are defined in regulations 2, 6, 7 and 8 under "Additional Regulations in the Faculty of Engineering".

   (b) Failed students may not write supplemental examinations nor complete courses graded Inc.

SUPPLEMENTAL EXAMINATIONS

1. A failed student may not write supplemental examinations.
2. A student may not write a supplemental examination in a repeated

course, nor may he write a second supplemental examination in the same course.

3. If a student is granted permission to write a supplemental examination, absence from the examination is counted as a failure and recorded as an 'R' grade.

4. Medical reasons (certified by a physician on his letterhead) constitute a valid excuse for exemption from most of the regulations concerning supplemental examinations. Such medical reasons must be submitted to the Examinations Office within ten days of the missed examination.

   a) A student absent from a regular examination for medical reasons may, if he wishes, write the supplemental examination as his final examination. If he passes he will receive a letter grade and will not be charged with a failure nor a supplemental under the maximum permissible allowances. If he fails he may apply to the Examinations Office to write a supplemental examination.

   b) A student absent from a supplemental examination for medical reasons is not considered to have failed the examination and may apply to the Examinations Office for an alternate date.

   c) A student taken ill during an examination and unable to complete the examination must obtain verification from the Nurse on duty. Such certification must be submitted to the Examinations Office within ten days of the date of occurrence.

5. Supplemental examinations in courses taken during the regular session must be written during the following July. Supplemental examinations in courses taken during the Summer Session must be written the following December.

6. Supplemental examinations may be written only at one of the following external examination centres in Canada: St. John's, Nfld.; Sackville, N.B.; Murray Bay, Quebec; Montreal, Quebec; Toronto, Ontario; Sudbury, Ontario; Thunder Bay, Ontario; Winnipeg, Manitoba; Saskatoon, Saskatchewan; Banff, Alberta; Vancouver, B.C. Any student wishing to write a supplemental examination at an external centre (outside of Canada) must arrange an appointment with the Director of Examinations before submitting an application.

7. Supplemental examinations are graded only 'S' (pass) or 'R' (fail).

8. Application to write a supplemental examination must be submitted by June 15 to the Coordinator of Examinations on a form which may be obtained from the Examinations Office. Students applying to write a supplemental examination at an external centre must submit the additional external application form with the regular application form. The required fee must accompany all applications.

COMPLETION OF COURSES GRADED INCOMPLETE

1. A failed student may not complete a course graded incomplete (Inc.).
2. A student is ineligible to complete an 'Inc.' in a repeated course.
3. Application to complete a course graded 'Inc.' must be submitted by June 15 to the Examinations Office. The required fee must accompany all applications. The limiting dates for submission of work are:

a) For the first-term courses in the Winter Session, not later than April 1st.
b) For all other courses in the Winter Session, not later than August 1st.
c) For all courses in the Summer Session, not later than November 1st.

4. Late completions are graded only 'S' (pass) or 'R' (fail) except for medical reasons (see regulations concerning supplemental examinations).

REPETITION OF COURSES

A student who has received credit for a completed course may not repeat that course and may not write a supplemental for purposes of up-grading, except as provided by the Additional Regulations in the Faculty of Engineering.

STUDENT REQUEST COMMITTEES OF FACULTY COUNCILS

Each of the Faculties has a Student Request Committee which is authorized to consider applications from students on matters relating to academic regulations.

Any undergraduate student seeking adjustment of an academic regulation should apply on the appropriate form available at the following Faculty offices:

Arts   - Dean's Office
Science   - Dean's Office
Commerce & Administration   - Dean's Office
Engineering   - Office of the Secretary
                                    for Engineering Under-
                                    graduate Studies

MSQP* AND PARTIAL STUDENTS

MSQP and Partial students, including those taking courses in the Engineering Faculty, are governed by the academic regulations specified for the Faculties of Arts, Science and Commerce and Administration.

MSQP students seeking adjustment of an academic regulation should submit requests to the Student Request Committee of their faculty.

Partial students must submit all requests relating to university regulations to the Registrar and *not to a Dean or Faculty Council.*

ADDITIONAL REGULATIONS IN THE FACULTY OF ENGINEERING

The grade point averages in these regulations are defined as follows:
(a) The cumulative grade point average, CGPA, is the ratio of the sum of

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* Mature Student Qualifying Programme

the grade points obtained in the complete program followed by the student prior to its calculation to the total number of courses in that program, regardless of whether they were taken as a partial course student or as an undergraduate.
(b) The yearly grade point average, YGPA, is the ratio of the sum of the grade points obtained in the program followed by the student during the year under consideration to the total number of courses in that program.

Points are awarded for each grade as described on page 0000. Courses taken during a Summer Session are included with those taken during the subsequent Winter Session in calculating the YGPA.

1. After their first year of attendance, students must maintain a CGPA of at least 1.80 to remain in good standing; if their CGPA falls below 1.80, they will be placed on probation for one year during which they must improve it to at least 1.80.
2. Probationary students failing to improve their CGPA to at least 1.80 are failed students and are required to withdraw from the program.
3. Students in good standing who fail one-third or less of the courses taken during the year with a YGPA of at least 1.50 are permitted to write supplemental examinations in courses graded F or Abs. and complete the work in courses graded Inc.
4. If permitted to write supplemental examinations or complete the work in courses graded Inc. at the end of their first year of attendance, students whose CGPA is below 1.80 at the start of the next Fall term will be placed on probation for one year during which they must improve it to at least 1.80.
5. Students eligible to write supplemental examinations or complete the work in courses graded Inc. and having more than one failure outstanding from the previous year at the start of the next Fall term must repeat all the failed courses and may repeat those in which they received D grades during their previous year of attendance.
6. Students who either (a) fail more than one-third of their courses taken during the year with a YGPA of at least 1.50 or (b) fail one-third or less of their courses taken during the year with a YGPA below 1.50 (this includes students who pass all courses) are failed students. They must repeat all the failed courses and may repeat those in which they received D grades during their previous year of attendance.
7. Students who fail more than one-third of their courses taken during the year with a YGPA below 1.50 are failed students and must withdraw from the program for at least one year. They may then apply to the Secretary for Engineering Undergraduate Studies for re-admission and, if their application is granted, must repeat all the failed courses and may repeat those in which they received D grades during their previous year of attendance.
8. Students whose CGPA falls below 1.80 after previously being on probation or after previously being required to apply for re-admission are failed students and must withdraw from the program.

REGULATIONS CONCERNING:

ACADEMIC RE-EVALUATION

CONDUCT DURING EXAMS

PLAGIARISM

Approved by the Board of Governors
on recommendation of the University Council
May 13, 1971

ACADEMIC RE-EVALUATION

(Collegial and Undergraduate)

I. General

1. Two alternative methods for handling academic re-evaluation are set out below. The first requires the appointment of a Moderator for each course in a department. The second requires the appointment of a Reader for each application. Each chairman shall decide which system is more suitable for his own department, and so inform the Dean of his Faculty.

2. Nothing in these regulations shall be taken to proscribe the right of a faculty member or chairman of a department to review a grade upon request by a student before formal application for a re-read or re-evaluation is made.

3. The term "re-read" refers to the process whereby a student appeals against a grade received *within* a course, i.e., for a research paper, or examination. The term "re-evaluation" refers to the process whereby a student appeals against his final grade in a given course.

II. Appointment of Course Moderators

1. A Moderator shall be appointed by the department chairman for each course the department offers.

2. The Moderator for a course will normally by named from within the University, but should have no responsibilities in the presentation of the course. However, there may be special circumstances which require the appointment of a moderator from outside.

3. To cover adequately multi-sectional courses it may be necessary to appoint several Moderators.

4. The responsibilities of the Moderator shall be :
(a) To be aware of the objectives of the course and its evaluation procedure prior to its presentation;
(b) To be aware of the formal examination paper(s) of the course in the event of a candidate applying for a re-read in it;
(c) To attend all formal oral examinations in the course;
(d) To re-read all work representing a major part of the final mark in the course in the event of a candidate applying for a re-read in it.

III. Appointment of Readers

1. A Reader shall be appointed by the chairman of the department on the receipt of an application for a re-read. He will normally be named from inside the University, but may be named from outside.

2. The Reader shall make himself aware of both the nature and structure of the course and the characteristics of the particular examination.

3. Should the chairman of the department be the instructor of the course, he shall be replaced by the Dean.

IV. Re-Reading and Re-Evaluation Procedures

1. The following procedures shall govern the re-reading of examinations whether final or supplemental and the re-evaluation of grades;

2. Any application for a re-read or re-evaluation must be made to the Registrar.

3. An application must be made within 14 days of the release of the grade in question. This delay may be extended in particular cases by the Registrar, but it shall not be extended unless the person applying for a re-read could not reasonably have acted within fourteen days.

4. The application must be submitted to the Registrar's office, and should be presented on the special form obtainable there. It must specify the nature of the re-read or re-evaluation claimed - e.g. for examination or course, and the grounds for the application. The Registrar may require further explanation from the student.

5. The application must be accompanied by a fee of $10.00, which is refundable if the grade is raised.

6. The Registrar shall file the application, and send a copy to the chairman of the department concerned so that the re-read or re-evaluation can be carried out.

7. The chairman of the department shall then have the re-read or re-evaluation carried out by the course Moderator if one has been appointed and is available, or by a Reader if a Moderator has not been appointed or is unavailable.

8. The re-read or re-evaluation shall be carried out privately, not in the presence of the applicant or his representative.

9. When the Moderator or Reader has completed the re-read or re-evaluation he shall return the work that he has re-read or re-evaluated to the chairman with his own grade.

10. If the Moderator or Reader agrees with the original grande, the chairman shall return the paper or papers to the Registrar with a statement to this effect.

11. If the Moderator or Reader changes the grade, the change should be agreed to by both the instructor who gave the original grade and the chairman before the material is returned to the Registrar. If the instructor is not available, the agreement of the chairman shall suffice.

12. If the original instructor disagrees with the change, the decision as to what grade is to be given devolves on the chairman of the department, who will indicate this fact in his statement to the Registrar.

13. The Registrar shall inform the applicant of the re-read or re-evaluation decision.

14. A grade can be either raised or lowered by a re-read or re-evaluation.

15. The re-reading or re-evaluation procedure should normally be completed within 21 days of the receipt of an application.

16. Either a Moderator or a second member of faculty must be present at any formal oral examinations. Application for a re-read or re-evaluation shall be referred to the Moderator or the member of faculty who was present at the oral.

17. There is no further appeal once a re-read or re-evaluation decision has been rendered.

18. An application for re-evaluation of a course grade may be refused if the student has not either handed in two copies of all term papers to the instructor or left the original papers with him.

19. Examination scripts shall be retained on the University premises for a period of six months from the close of the examination period.

20. Department chairmen are responsible for ensuring that examination scripts are available for re-reading, and that an appropriate person is always available to carry out re-reads within the time period established.

V. Notes

1. In order to minimize the number of re-read or re-evaluation applications, any faculty member who has papers graded by a teaching assistant shall personally check all failing papers as well as papers close to the borderline for grades or classes before submitting the results.

2. The Student Request Committees of the various Faculties shall not be involved in re-reads or re-evaluations.

CONDUCT DURING EXAMS
(Collegial and Undergraduate)

I. General

1. The candidate taking any form of examination shall not use or attempt to use any material in any form except that which is expressly authorized by those conducting the examination.

2. A candidate shall not speak or otherwise communicate with another candidate or with any person other than the invigilator(s) or instructors(s) except when such communication is expressly authorized by those conducting the examination.

3. Every examination paper shall expressly indicate the materials that a candidate is permitted to have with him during the examination, such as text books with notations, text books without notations, slide rules, etc., or shall expressly state that a candidate is not permitted to have any such materials with him.

4. Every examination paper shall expressly indicate the length of the examination and special conditions, if any, such as permission for students to work together, etc.

5. The invigilators or other persons conducting an examination may at their discretion transfer a candidate from one location in the examination room to another.

II. Cheating

1. Cheating means any dishonest or deceptive practice relating to an examination, and more particularly, but not restrictively, includes the following:
(a) Making use of any book, paper, script, writing, drawing or anything else not expressly authorized by those conducting the examination;
(b) Communicating during an examination with any person other than one of those conducting the examination for the purpose of obtaining for oneself or providing to another candidate un-authorized assistance in the taking of the examination;
(c) Attempting to do any of the above.

2. A candidate who is to be charged with cheating during an examination shall be so informed by one of the persons conducting the examination, and his taking of the examination shall be suspended forthwith. One of the persons conducting the examination shall take the candidate's examination book, where there is one, as well as any other evidence relating to the charge, and the candidate shall be required to leave the examination room immediately.

3. As soon as is reasonably possible after the examination, the evidence shall be delivered to the Registrar, who, if he deems it appropriate to proceed, shall see that a written charge is prepared and transmit it to the Dean of the Faculty in which the candidate is registered.

4. The charge shall be made in writing, and must be dated and signed by the person who is making it. The allegations must be stated therein in such a way as to inform the candidate with precision what allegations are being made against him.

5. The Dean shall send, as soon as is reasonably possible, a copy of the charge to the candidate, and shall inform the candidate of the procedures and sanctions relating to the charge. The Dean shall also ask the candidate, in writing, wheter he admits or denies the charge.

6. The candidate shall admit or deny the charge, in writing, within 14 days of the date of its mailing to him at the last address given by him to the University. This delay may be extended unless the candidate could not reasonably have acted within the 14 days.

7. Where the candidate admits the charge, the Dean shall apply the sanction set out below.

8. Where the candidate does not admit or deny the charge as provided above, the Dean himself shall conduct a hearing on the charge.

9. Where the candidate denies the charge, the Dean shall offer him a choice of :

(a) a hearing by the Dean himself, or;

(b) a hearing by a committee of three persons, selected by the Dean from a panel nominated by the candidate's Faculty Council.

Where the candidate chooses the latter form of hearing, he may choose that the committee consist of three faculty members, or two faculty members and one student, or one faculty member and two students. Where he does not make this choice, the Dean shall make it.

10. The candidate has the right to be present at the hearing on the charge.

11. The decision of the Dean or of the committee, as the case may be, shall be in writing and shall be a reasoned one. A copy of the decision shall be sent to the candidate.

12. The candidate shall have a right of appeal to University Council against the decision of the Dean or of the committee as the case may be. A notice of such appeal shall be made in writing to the Secretary of University Council within 21 days of the decision referred to above. This delay may be extended in exceptional cases by University Council.

13. The appeal shall be heard and decided in the manner deemed most appropriate by University Council.

14. A candidate who admits to having cheated or who is found to have cheated as provided above shall be expelled, or suspended from the University for the remainder of the year and not more than one additional year, such year beginning on September 1st and ending on August 31st if the charge relates to an act occurring in the winter session, and from June 1st to May 31st if the charge relates to an act occurring in the summer session. All credits for courses taken during the full year as described herein shall be cancelled.

15. Should a candidate either admit or be found to have cheated as provided above for the second time he shall be expelled from the University.

16. A sanction of suspension or expulsion as provided above is subject to confirmation by the Principal of the University.

17. Should a charge against a candidate not be proceeded with or upheld, the Dean of the candidate's Faculty and the Registrar shall take the appropriate steps for the candidate to be evaluated.

18. Wherever reference is made above to a Dean or any other official of the University, and the Dean or other official is unable to exercise his functions, the person who is replacing him shall carry out those functions.

PLAGIARISM
(Collegial and Undergraduate)

I. General

1. Plagiarism, for the purposes of these regulations, includes the presentation or submission by a student of another person's work as his own.

II. Procedures and Sanctions

1. If an instructor has reason to believe that a student has committed plagiarism, as defined above, he shall immediately inform the student concerned and discuss the circumstances with him.

2. After such discussion, the instructor shall :

(a) decide that no further action is necessary, or ;

(b) require that the work be resubmitted with appropriate changes, or;

(c) give the student an 'R' grade in the course for which the work was done, or;

(d) refer the matter to the chairman of the department.

3. If the instructor's decision is that set out in 2(a) or 2(b), the matter shall be considered closed. If the decision is that set out in 2(c), the student may appeal it to the chairman of the department.

4. Should a student appeal a decision as set out in 2(c), the chairman of the department shall :

(a) uphold the award of the 'R' grade, or;

(b) cancel the 'R' grade, and decide no further action is necessary, or;

(c) cancel the 'R' grade, and require that the work be resubmitted to the instructor with appropriate changes.

The chairman's decision shall be final.

5. If the matter is referred to the chairman of the department, as set out in 2(d), and an appropriate deparmental committee exists, he shall refer it to that committee.

6. If an appropriate committee exists, the committee shall review all the circumstances with the instructor and the student, and shall :

(a) decide that no action is necessary, or;

(b) require that the work be resubmitted with appropriate changes, or;

(c) decide that a formal charge shall be made against the student.

If the committee's decision is that set out in 6(a) or 6(b), the matter shall be considered closed.

7. If the matter is referred to the chairman of the department as set out in 2(d), and no appropriate departmental committee exists, the chairman shall review all the circumstances with the instructor and the student, and shall :

(a) decide that no action is necessary, or;

(b) require that the work be resubmitted with appropriate changes, or;

(c) decide that a formal change shall be made against the student.

If the chairman's decision is that set out in 7(a) or 7(b), the matter shall be considered closed.

8. If either the appropriate committee or the chairman of the department decides that a formal charge shall be made against the student, the chairman shall send that charge to the Dean of the Faculty in which the student is registered.

9. The formal charge to the Dean shall be made in writing, and be dated and signed by the chairman of the department. The allegations must be stated therein in such a way as to inform the student with precision what allegations are being made against him.

10. In the event that the instructor is himself chairman of the department, the Dean of his Faculty shall appoint another member of the department to act in his place.

11. The Dean shall send, as soon as is reasonably possible, a copy

of the charge to the student and shall inform the student of the procedures and sanctions relating to a formal charge. The Dean shall also ask the student, in writing, whether he admits or denies the charge.

12. The student shall admit or deny the charge, in writing, within 14 days of the date of its mailing to him at the last address given by him to the University. This delay may be extended in exceptional cases by the Dean, but it shall not be extended unless the student could not reasonably have acted within the 14 days.

13. Where the student admits the charge, the Dean shall apply the sanction set out below.

14. Where the student does not admit or deny the charge, the Dean himself shall conduct a hearing on the charge.

15. Where the student denies the charge, the Dean shall offer him a choice of :

(a) a hearing by the Dean himself, or;

(b) a hearing by a committee of three persons, selected by the Dean from a panel nominated by the student's Faculty Council.

Where the student chooses the latter form of hearing, he may choose that the committee consist of three faculty members, or two faculty members and one student, or one faculty member and two students. Where he does not make this choice, the Dean shall make it.

16. The instructor and the student have the right to be present at the hearing on the charge.

17. The decision of the Dean or of the committee, as the case may be, shall be in writing and shall be a reasoned one. A copy of the decision shall be sent to the instructor and the student.

18. The student shall have the right of appeal to University Council against the decision of the Dean or of the committee, as the case may be. A notice of such appeal shall be made in writing to the Secretary of University Council within 21 days of the decision referred to above. This delay may be extended in exceptional cases by University Council.

19. The appeal shall be heard and decided in the manner deemed most appropriate by University Council.

20. A student who admits that he has committed plagiarism or is found to have committed plagiarism as set out in a charge under paragraph 9 shall be expelled, or suspended from the University for the remainder of the year and not more than one additional year, such year beginning on September 1st and ending on August 31st if the charge relates to an act occurring in the winter session, and from June 1st to May 31st if the charge relates to an act occurring in the summer session, or have imposed any of the lesser penalties available to the instructor as set out in 2(b) or 2(c). All credits for courses taken during the full year as described herein shall be cancelled.

21. Should a student either admit to or be found to have committed plagiarism as set out in a charge under paragraph 9, for the second time, he shall be expelled from the University.

22. A sanction of suspension or expulsion as provided above is subject to confirmation by the Principal of the University.

23. Should a charge of plagiarism as set out under paragraph 9 against a student not be upheld, the Dean of the student's Faculty shall take the appropriate steps to have the work that was the subject of the charge evaluated.

24. Wherever reference is made above to a Dean or any other official of the University, and the Dean or other official is unable to exercise his functions, the person who is replacing him shall carry out those functions.

May 13, 1971.

XI
fees

Fees structure for 1971-72 is now under review and is subject to slight revisions.

FEES

Day Division

Arts, regular programme (with one lab or problem period)	$450.00
Fine Arts, regular programme (with two studio periods)	475.00
Science, regular programme (with three labs or problem periods)	475.00
Commerce, regular programme (with one lab or problem period)	450.00
Engineering I, II, III, including lab fees	525.00
Engineering IV, V, including lab fees	650.00
Partial student, per course	100.00
Special Summer Session (full course)	100.00
Special Summer Session (half course)	50.00
Additional course	90.00

Other Fees

Day Division:

Students' Association Fee	$ 15.00
Student Union Fee	5.00
Students' Services Fee	36.00

Student Faculty Association fees not exceeding $5.00 per day student are payable in addition to the fees set out above.

Evening Division

Half course	$ 45.00
Full course	90.00
Engineering, maximum winter session (including lab fees)	280.00

Other Fees

Evening Division:

Evening Students' Association Fee (Summer)	$ 1.00
Evening Students' Association Fee (Winter)	5.00
Students' Services Fee (Undergraduates)	8.00
Students' Services Fee (Partial)	14.00

Laboratory Fees

Day & Evening Divisions

For each subject involving a lab or problem period in addition to those included in fees above	$ 40.00

Miscellaneous Charges

All Divisions:

Application Fee	$ 10.00
Associate Diploma Fee	$ 5.00
Course and/or Section Change (per subject)	5.00
Effective Reading Course (registered students)	15.00
Effective Reading Course (others)	85.00
Engineering Certificate	5.00
Graduation Fee, must be paid by April 1st	10.00
Issuance of Certificate of Registration (additional)	1.00
Re-reading of paper (refundable if grade is raised)	10.00
Removal of "Incomplete"	10.00
Replacement of Identification Card	5.00
Special Examination Fee, per paper	15.00
Special Registration Fee	10.00
Supplemental Examinations, per paper (written at S.G.W.U.)	10.00
Supplemental Examinations, per paper (at other Canadian centres)	15.00
Supplemental Examinations, per paper (at external centres)	*15.00

*Note: - Invigilation fee not included.

The University reserves the right to institute additional fees and to adjust existing fees without notice.

Policy on Payment of Tuition Fees

On registration students contract to pay the full tuition fees for the courses selected for the academic year. Any student under 21 years of age must be accompanied by a parent or a guardian who must sign the tuition contract, or he must provide the University with the written consent of a parent or guardian to sign a tuition contract with the University. These contracts are binding and may be cancelled only at the discretion of the Treasurer.

Normally, tuition and other fees are paid in full at the time of registration. Students may apply at registration for permission to pay their fees in instalments. Typical examples of the two and five payment plans which are available are set out on the next two pages as Plans "A" and "B". Minimum deposits as shown must be paid at the time of registration. Similar arrangements may be granted to students who have been accepted and who have paid $250.00 for guaranteed admission. All two payment and five payment plans are subject to a deferred payment charge of $5.00 and $10.00 respectively. Registration is not considered complete in any case until students have complied with the regulations of the Registrar's Office and have paid the prescribed deposit or have made arrangements for payment, approved by the Treasurer's Office.

All tuition accounts not paid in full on or before October 1st are subject to a deferred payment charge as set out above. All tuition accounts not paid in full by February 28th will be assessed the maximum deferred payment charge of $10.00.

All contracts are subject to revision for adjustment of errors.

EVENING DIVISION UNDERGRADUATES

Number of Courses	Total Fees	PLAN "A"		PLAN "B"	
		On Reg'n	Jan. 2	On Reg'n	4 Monthly Payments Starting Nov. 1
½ Course	$ 58.00	$ 35.00	$ 28.00	$ 32.00	$ 9.00
1 Course	103.00	60.00	48.00	49.00	16.00
1 + 1 lab	143.00	80.00	68.00	57.00	24.00
1½ Courses	148.00	85.00	68.00	62.00	24.00
1½ + 1 lab	188.00	105.00	88.00	90.00	27.00
2 Courses	193.00	110.00	88.00	83.00	30.00
2 + 1 lab	233.00	130.00	108.00	107.00	34.00
2 + 2 labs	273.00	150.00	128.00	139.00	36.00
2½ Courses	238.00	130.00	113.00	112.00	34.00
2½ + 1 lab	278.00	150.00	133.00	140.00	37.00
2½ + 2 labs	318.00	170.00	153.00	160.00	44.00
3 Courses	283.00	155.00	133.00	149.00	36.00

DAY DIVISION

Courses	Total Fees	PLAN "A"		PLAN "B"	
		On Reg'n	Jan. 2	On Reg'n	4 Monthly Payments Starting Nov. 1
Arts	$511.00	$300.00	$216.00	$181.00	$ 85.00
Science	536.00	300.00	241.00	206.00	85.00
Fine Arts	536.00	300.00	241.00	206.00	85.00
Commerce	511.00	300.00	216.00	181.00	85.00
Engineering I, II, III	585.00	325.00	265.00	215.00	95.00
Engineering IV, V	710.00	400.00	315.00	260.00	115.00

The above schedules include deferred payment charges of $5.00 in Plan "A" and $10.00 in Plan "B". The schedules also include Other Fees which total $61.00 for the Day Division and $13.00 for the Evening Division.

EVENING DIVISION PARTIAL

Number of Courses	Total Fees	PLAN "A"		PLAN "B"	
		On Reg'n	Jan. 2	On Reg'n	4 Monthly Payments Starting Nov. 1
½ Course	$ 64.00	$ 40.00	$ 29.00	$ 38.00	$ 9.00
1 Course	109.00	65.00	49.00	55.00	16.00
1 + 1 lab	149.00	90.00	64.00	63.00	24.00
2 courses	199.00	120.00	84.00	89.00	30.00
2 + 1 lab	239.00	140.00	104.00	113.00	34.00
2 + 2 labs	279.00	170.00	114.00	145.00	36.00
3 Courses	289.00	175.00	119.00	151.00	37.00

The above schedule includes deferred payment charges of $5.00 in Plan "A" and $10.00 in Plan "B". The schedule also includes Other Fees which total $19.00.

Course Cancellations, Withdrawals and Adjustments

1. Any student who cancels a course or withdraws from the University is required to notify the Registrar's Office in person or in writing as indicated on page 320 and to give his reason for withdrawing. Cancellation of courses or withdrawal from the University does not necessarily entitle a student to refund of fees or cancellation of contract.

2. Evening Division students who cancel a course or withdraw from the University must do so within a two (2) week period (14 calendar days) from and including the date of commencement of the current academic term. In the event of course cancellation within this period, the rebate is 75% of the tuition fee for each full course, 50% of the tuition fee for each half course scheduled in the first term and all of the tuition fee except the registration deposit of $10.00 for each half course scheduled in the second term. In the case of lab fees the rebate is 50% of the fee. If a student cancels a second-term half course during the first two (2) weeks (14 calendar days) of the second term, the rebate is 50% of the tuition fee and in the case of lab fees the rebate is 50% of the fee. **After the two week period immediately following the beginning of the term (for second-term half courses, immediately following the beginning of the second term) no refunds or adjustments are allowed for any reason.**

3. Full time day students who withdraw within the two (2) week period (14 calendar days) from and including the date of commencement of the current academic term will receive a rebate of 75% of the tuition fees only. However, an applicant who has been accepted and who has paid $250.00 for guaranteed admission to the Day Division will forfeit this amount in the event that registration is not completed or if the application is withdrawn or cancelled after acceptance, regardless of the reason. If registration is completed and then cancelled, this amount will be kept as a minimum charge. After the two week period following the beginning of the term no refunds or adjustments are allowed for any reason.
   In the event that less than the regular programme of courses is taken the full fee will apply.

4. In the Day Summer Session no adjustments or refunds are allowed for cancellation of courses made after the start of the session.

5. Failure to attend classes shall not be considered a cancellation of contract.

6. In the event that the University grants a refund, the following fees are not refundable, viz : students' services fees; fees for course changes; late registration; removal of incompletes, supplemental examinations; student societies; mature matriculation; and application fees.

7. A registration deposit of $10.00 per subject (full or half course) will be charged for cancellation of contract before the start of the term.

8. An evening student who has previously obtained special permission to register for more than the normal course load is not granted any adjustment for the cancellation of any courses.

9. Failure to make payments of tuition fees or other amounts owed the University, when they fall due, or to arrange for such payments before their delinquent dates, is considered sufficient cause, until the debt has been adjusted with the Treasurer's Office, to (1) bar the student from classes or examinations, and/or (2) withhold diploma, scholastic certificate, or transcript of record.

10. Full course (.0) fees are not transferable to half courses (.2) nor is any adjustment allowed on full (.0) courses in the second term.

XII
prizes

PRIZES

Information on all aspects of financial aid including Canada Council grants may be obtained from the Office of the Dean of Students.

The Birks Medal awarded annually, when merited, by Henry Birks & Sons (Montreal) Ltd., to the highest ranking graduating student in Arts.

The Mappin Medal awarded annually, when merited, by Mappin's Ltd. of Montreal to the highest ranking graduating student in Science.

The Frosst Medal awarded annually, when merited, by Charles E. Frosst & Co., to the highest ranking graduating student in Commerce.

The Chait Medal awarded annually, when merited, to the highest ranking graduating student in Engineering.

The Alfred Pinsky Medal awarded annually, when merited, to the highest ranking graduating student in the Fine Arts programme.

The Board of Governors Medal for Creative Expression awarded annually, when merited, by the Board of Governors of the University to the student or students giving evidence of independent work outside the classroom of outstanding ability in creative expression in English or the Fine Arts. – creative writing, oratory, drawing, painting, drama, or music.

Governor-General's Medal. Presented by His Excellency the Governor-General of Canada, awarded annually to the graduating student showing the highest achievement in the field of English language and literature.

The J. W. Bridges Medal for Psychology awarded annually, when merited, to the graduating student with the highest standing in Psychology. This prize was established by his colleagues of the faculty to honor the outstanding contribution of Dr. J.W. Bridges, Professor Emeritus and former Chairman of the Department of Psychology.

The W. R. Fraser Medal for Philosophy awarded annually, when merited, to the graduating student with the highest standing in Philosophy. This prize was established by his colleagues to honour the outstanding contribution of W.R. Fraser, Professor Emeritus, and former Chairman of the Department of Philosophy.

The Sun Life Prize in Economics awarded annually, when merited, by the Sun Life Assurance Company of Canada, to the graduating student with the highest standing in the Economics Honours or major.

The Everett C. Hughes Medal awarded annually, when merited, to the graduating student with the highest standing in Sociology. This prize was established by his colleagues to honour the outstanding contribution of Professor Everett C. Hughes to the development of Sociology in Canada.

The Canadian International Paper Company Prize in Biology, a cash prize of $100.00 to be awarded annually, when merited, to the graduating student with the best record of work in the field of Biology.

The Ross Medal awarded annually, when merited, by Dr. Howard I. Ross to the graduating student with the highest standing in the Accountancy major.

Merit Award, The Society of Chemical Industry - Canadian Section, awarded annually, when merited, to the student majoring or honouring in Chemistry with the highest standing in the final year of this course.

Association of Alumni Award awarded annually, when merited, to the graduating student, who, in the opinion of the Scholarship Committee, has by his activities, achievements, and interest, during his term at the University, won the outstanding commendation and respect of his fellows and of the faculty.

First Graduating Class Award. The first graduating class of the Faculty of Arts, Science and Commerce, known as the Guinea Pig Club, a name symbolic of their pioneering experience, makes a presentation when merited to a member of the university community who is adjudged to have made the most outstanding new contribu-

tion, either academic or extra-curricular, to the student life of the University.

The Robert C. Rae Prize in Applied Social Science awarded annually, when merited, to the graduating student with the highest standing in Applied Social Science.

The Prize for Geography awarded annually, when merited, to the graduating student with the highest standing in Geography.

The Medal for Geology awarded annually, when merited, to the graduating student with the highest standing in Geology.

The Prize for French awarded annually, when merited, to the graduating student with the highest standing in French.

Other Prizes for French Studies:

> **Prix du Département de Français**
> **Prix du Consul général de Suisse**
> **Prix du Consul général de Belgique**
> **Prix du Consul général de France**

The Prize for History awarded annually, when merited, to the graduating student with the highest standing in History.

The Prize for Humanities of Science awarded annually, when merited, to the graduating student with the highest standing in Humanities of Science.

The Medal for Mathematics awarded annually, when merited, to the graduating student with the highest standing in Mathematics.

The Prize for Modern Languages awarded annually, when merited, to the graduating student with the highest standing in Modern Languages.

The Medal for Physics awarded annually, when merited, to the graduating student with the highest standing in Physics.

The Herbert F. Quinn Medal for Political Science awarded annually, when merited, to the graduating student with the highest standing in Political Science.

The Boyd Sinyard Prize in Religion awarded annually, when merited, to the graduating student with the highest standing in Religion.

The Chemical Institute of Canada Prize awarded annually to the best third-year student entering fourth year and majoring in Chemistry.

The Montreal Economics Association Award awarded annually to the third-year student with the highest standing in Economics.

Hebrew Culture Organization of Canada Prizes, Samuel Kizell Memorial Prize of $50.00 awarded annually, for excellence in the study of the Hebrew language.

An additional prize of $50.00 awarded annually, for excellence in the study of the Hebrew language.

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student life

STUDENT LIFE

A wide variety of extra-curricular activities is available to students, with special clubs for many cultural, social, political, religious and other interests. The Athletics Department organizes intramural sports, and SGWU teams compete with other Quebec institutions of higher education. There are several student-run newspapers or publications, and student television and radio stations.

The various clubs and student-run activities as well as Student Faculty Associations are grouped under the Students' Association, whose officers are elected by the full-time collegial-level and undergraduate students. In addition, there is an Evening Students' Association and a Graduate Students' Association.

One feature of SGWU is the University Council on Student Life, reporting to the Principal, which has a majority of student members and is concerned with the various student services such as Athletics, Guidance, in which SGWU is a national leader, and the functions performed by the Dean of Students' office. The UCSL recommends policies in these areas as well as the budgets for the activities.

STUDENT SERVICES

Legal Aid

This service is designed primarily to assist students who have problems with a lease or a contract but extends to other problem areas. Students are strongly urged to refer leases to the Office · of the Dean of Students prior to completion.

Orientation

The Orientation program is concerned with introducing the new student to the campus and assisting him or her in resolving any problems that may be encountered in the early stages of contact with the University.

Off-Campus Housing

As there are no residence facilities at this University, the Office of the Dean of Students maintains an off-campus Housing Registry for students seeking accommodations. This Registry represents listings of rooms, room and board, and apartments. The cost, location and particulars of each listing are included.

Student Health and Accident Insurance

This plan is a health and accident policy for the benefit of day students. This group insurance plan is offered on a voluntary basis for students from Quebec and other provinces, and the cost is $11.00 per student who is eligible for provincial or federal hospital and medical coverage.

Chaplains

The Chaplains at Sir George Williams University are appointed and supported financially by their various denominations (Anglican, Jewish, Lutheran, Orthodox, Roman Catholic and United) and are approved by the Dean of Students Office through the Principal of the University. Some are part-time, others full-time, but all of them are concerned with the needs and interests of the students.

Out-of-Country Students

The group health and accident insurance plan is *compulsory* for *all* out-of-country students entering this university. Out-of-country students are ineligible for basic coverage offered under the Provincial Hospital Insurance Service. The daily hospital allowance is $45.00 and approximates charges made by local hospitals. The cost of the compulsory insurance programme will be $43.00 for all new out-of-country students, and $56.00 for those other than new students enrolling on a voluntary basis.

Financial Aid

The Office of the Dean of Students maintains staff who are always available to help students solve individual problems or to explain existing programmes and regulations.

Quebec Social Allowance

A monthly allowance of $10.00 is granted to the parent or guardian of all full-time students domiciled in the Province. of Quebec and who are between the ages of 16 to 18. For information, please address all correspondence to :
The Social Allowances Commission
Department of Family and Social Welfare
Parliament Buildings
Quebec City, Quebec

Province of Quebec Loan-Bursary Plan

Provincial Government assistance is available in the form of guaranteed loans and bursaries, the amount of which is in accordance with the financial needs of the students. It is important for the student to note that the provincial government operates on the philosophy that the primary responsibility for financing a student's post-secondary education belongs to the student and/or his family. Assistance is provided to supplement family-student resources. Further, it is important to note that to qualify for bursary assistance, the student must first accept a loan.

Deadlines:
Students must apply prior to September 30, 1971. Registration cards may be obtained from the Office of the Dean of Students or directly from the Student Aid Service. If you applied during the 1970-71 academic year, you will automatically receive an application at the address shown on your 1970-71 form. It is not necessary for you to wait until you are registered before having your form approved by the Office of the Dean of Students.

Eligibility Requirements:
The student must:
1. Be a Canadian citizen;
2. Be domiciled in Quebec and have lived here for a period of one year;
3. Have completed and forwarded his application form prior to the established deadline.

NOTE: Students·who have been landed immigrants for a period of one year, and have been living in Quebec for at least one year, are eligible for financial assistance, provided they show proof of intention to remain in Quebec after graduation.

University Bursaries and Scholarships

A number of University bursaries and scholarships are available for students in both the Day and Evening Divisions. A complete listing of these awards and the conditions under which they are awarded is available from the Office of the Dean of Students. The application form must be submitted prior to August 30th of each academic year.

Emergency Loan Fund

The Sir George Williams University Loan Fund is administered on behalf of both the Day and Evening Students' Associations by the Office of the Dean of Students. The Fund provides students with short-term financial assistance. The maximum loan is normally $150.00 for a period not exceeding 90 days. Students are welcome to use the fund as many times as is necessary; however, they may not have two loans outstanding at any one time.

Health Services

The University Health Centre is located at 2145 Mackay Street. The Centre is staffed with Registered Nurses, Monday through Friday from 8:30 a.m. to 10:00 p.m. Appointments to see the doctor may be made by calling local 4010. The Centre can refer students to various specialists and is equipped to give treatment for headaches, first aid, and minor injuries.

Personnel

Magnus Flynn, *Dean of Students*
Jack Hopkins, *Assistant Dean of Students*
Doug Insleay, *Assistant Dean of Students*
Bill Moss, *Administrative Assistant (Research and Innovation)*
David Ramsay, *Financial Aid Assistant*
Joan Richardson, *Assistant to the Dean of Students*

ATHLETICS

Intercollegiate Sports

The University is a member of the Quebec Universities Athletic Association and the Canadian Intercollegiate Athletic Union. Participation in intercollegiate athletics is dependent upon satisfactory academic performance and is limited to full-time day students.

Intramural and Recreational Activities

The intramural programme for men and women students includes team sports as well as individual and special interest events. New activities can be initiated by contacting the Director.

Facilities

The University rents local facilities for both fall and winter games. Students interested in membership in the YMCA at reduced fees should contact the Athletics Department.

Responsibility of University

While every reasonable precaution will be taken to prevent accidents, students are reminded that participation in athletics and other curricular or extra-curricular activities in the University is entirely at their own risk. Students competing in intercollegiate athletics are covered by an athletics accidents insurance policy. Other participants may purchase the same coverage at a nominal cost. The University accepts no responsibility for the loss of personal effects.

Student Managers, Cheerleaders

If you enjoy working with teams and would like to be a student manager, assistant or cheerleader contact the department as soon as you register.

Eligibility

Everyone is eligible for intramural and recreational activities, but only full-time day students with satisfactory academic performance may compete in intercollegiate sports.

Responsibility of University

It is the responsibility of the student to have proper accident and medical insurance.

Registration and Athletic Information

Students may register for all sports at the department office. Athletic notice boards are situated throughout the buildings and the student newspapers usually cover all Georgian events.
2160 Bishop Street – Tel. No. 879-5840.

Personnel

Paul Arsenault, M.Sc., *Director*
Joe Roboz, B.A., *Intercollegiate Sports*
Jane Tanner, *Women's Sports*

GUIDANCE SERVICES

Counselling - 879-2879

Personal, Educational, Vocational, Individual appointments, Group programs.

Guidance Information - 879-4443

Collegial, Undergraduate, Graduate Education and career planning information and assistance.

Reading and Learning Skills - 879-2879
Effective Reading Courses, Learning Skills Sessions.
Hours as arranged.

Student Placement - 879-2801
Job placement and Career Counselling, Full time, Part time, Temporary, Collegial, Undergraduate, Graduate.

2020 MacKay Street, Monday to Friday, 9 a.m. to 5 p.m., Evening hours during winter as arranged.

Personnel
J. A. Sproule, B.A., M.Ps.Sc., *Director*
F. W. Denton, M.A., *Assistant Director*
R. C. Boncore, B.A., M.Sc., *Counsellor*
J. C. Gellert, B.A., M.Sc., *Counsellor*
J. Goldner, B.A., B.Com., B.S.W., *Counsellor*
D. P. Kredl, B.A., M.Ed., *Counsellor*
J. E. Rubin, B.A., M.Sc., *Counsellor*
J. J. Skene, B.A., *Counsellor*
D. M. Stehouwer, B.A., M.Ed., *Counsellor*
M. L. Bowman, B.A., M.Sc., *Counsellor, Evening Staff*
J. G. Eaton, B.A., M.Ed., *Counsellor, Evening Staff*
E. Gutbrodt, B.A., Ph.D., *Counsellor, Evening Staff*
J. Harder, B.Sc., M.A., *Counsellor, Evening Staff*
S. B. Montin, B.A., Ed.M., *Counsellor, Evening Staff*
Guy Da Silva, M.D., *Consultant Psychiatrist*
C. D. Richards, B.A., M.L.S., *Guidance Librarian*
J. Phillips, B.A., M.L.S., *Guidance Librarian*
D. P. Osborne, B.A., *Reading Instructor*
N. Diamond, *Placement Supervisor*
O. Rayson, *Placement Counsellor*
D. Biggers, B.A., *Placement Counsellor*

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